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Some
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ts of

Page.
..... 49–86
, 52.
For-

... 87–183
, 91.

... 184–254
mant
195.
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.... 255–262
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.... 263–308
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CENSUS OF THE PHILIPPINE ISLANDS

VOLUME I

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CENSUS OF THE PHILIPPINE ISLANDS

VOLUME I

ΤΟΠΟΓΡΑΦΙΑ

OLD MAP OF MANILA.

MADE DURING THE ADMINISTRATION OF GOVERNOR VALDES 1730–1739: FROM ORIGINAL SEIZED BY THE ENGLISH AT THE CAPTURE OF MANILA IN 1762: NOW IN BRITISH MUSEUM.

A CATHEDRAL.
B GOVERNOR'S PALACE.
C AUDIENCIA REAL.
D COLLEGE OF ST. PHILIP.
E AUDITOR'S OFFICE AND SOLDIERS' QUARTERS.
F NAVAL WAREHOUSES.
G ROYAL CHAPEL.
H ANCIENT WAREHOUSES.
Y SANTA CLARA.
J ROYAL HOSPITAL.
K TOWN HALL.
L COLLEGE OF ST. THOMAS AND PRESS.
LL CHURCH AND CONVENT OF SANTA DOMINGO.
M SCHOOL OF SANTA CATALINA DE SENA.
N COLLEGE OF ST. JUAN DE LETRAN.
Ñ ASYLUM AND HOSPITAL OF ST. JUAN DE DIOS.
O RETREAT AND CONVENT OF ST. FRANCISCO AND CHAPEL OF SAME.
P CHURCH AND CONVENT OF THE BAREFOOTED AUGUSTINIANS.
Q ARMORY OF THE FORTRESS.
R BROTHERHOOD OF JESUS.
S COLLEGE OF ST. YGNACIO.
T BARRACKS OF THE FORTRESS.
V CHURCH AND CONVENT OF ST. AUGUSTIN.
X COLLEGE OF ST. YSABEL.
Z TREASURY AND AUDITOR'S OFFICE.
AA ARCHIEPISCOPAL PALACE.

CENSUS

OF THE

PHILIPPINE ISLANDS

Taken Under the Direction of the
Philippine Commission in
the Year 1903

IN FOUR VOLUMES

VOLUME I

GEOGRAPHY, HISTORY, AND POPULATION

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COMPILED AND PUBLISHED BY THE
UNITED STATES BUREAU OF THE CENSUS
WASHINGTON, 1905

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Government Printing Office

CONTENTS.

VOLUME I.—Geography, History, and Population.
VOLUME II.—Population.
VOLUME III.—Mortality, Defective Classes, Education, and Families and Dwellings.
VOLUME IV.—Agriculture, and Social and Industrial Statistics.

VOLUME I.

INTRODUCTION.

Authority for and scope of the census, 11. Plan and organization, 13. Appointment and instruction of census supervisors and enumerators, 16. Enumeration of Christian tribes, 21. Non-Christian tribes, 22. Results of the census, 27. Remarks on the geography and history of the Philippines, 28. Some significant facts concerning the population, agriculture, education, mortality, social statistics, and manufactures, 36. Possible future effects of the census, 47.

GEOGRAPHY.

Page.

I. Physical formation 49–86
Situation and characteristics of the archipelago, 49. Harbors, 52. Area, 56. Mountains and rivers, 60. Fauna and flora, 73. Forests, 75. Mineral resources, 79.

II. Climate 87–183
Influences affecting climatological conditions, 87. Temperature, 91. Water vapor, 104. Movement of the atmosphere, 128.

III. Volcanoes and seismic centers 184–254
Situation and nature of the archipelago, 184. Active and dormant volcanoes, 187. Historical geology, 194. Earthquakes, 195. Observation of seismic disturbances, 199. Volcanoes and earthquakes in Mindanao and the Visayas, 200. In southeastern, central, and northern Luzón, 221. Relative frequency of earthquakes, 251.

IV. Elevations 255–262
Alphabetical list of the principal elevations in the Philippine Islands, 255.

V. Islands of the Philippine archipelago 263–308
Summary of islands of the Philippine archipelago, 263. Islands of the Philippine archipelago having an area larger than 100 square miles, 263. Islands of the Philippine archipelago, arranged geographically from north to south, 264. Islands of the Philippine archipelago, alphabetically arranged, with location, 287.

79074

HISTORY.

Page.

I. Discovery and progress 309–388
Settlement and early history, 309. Immigration of Chinese, 318. Later history, 320. Slavery, 324. Local government, 325. Power of the monastic orders, 340. Commerce and revenues, 346. Government, 361. Emancipation from Spain, 374.

II. The judiciary 389–410
Early government, 389. Oppression, 390. Courts of first instance, 400. Municipal courts, 402. Special courts, 404.

POPULATION.

I. History of the population 411–491
Christian or civilized tribes, 411. Non-Christian or wild tribes, 453. Chinese and other foreign elements, 477.

II. Characteristics of the civilized or Christian tribes 492–531
Extracts from early narratives and reports, 492. Comments of recent travelers and of clergymen, 498. Opinions of some of the American governors and census supervisors, 511. Governor Taft's description of Filipino traits and customs, 529.

III. Characteristics of the non-Christian tribes 532–585
Negritos, 532. Igorots, 533. Ilongots, 545. Mangyans, 547. Tagbanúas, 548. Tirurayes, 549. Subanos, 552. Bilans, 560. Bagobos and Mandayas, 561. Moros, 561.

APPENDICES.

Appendix I.—An act to provide for taking a census of the Philippine Islands 587–595
Appendix II.—Organization of the Philippine Census 597–601
Appendix III.—Bibliography 603–607
Index 609–619

MAPS, DIAGRAMS, AND OUTLINES.

Page.

Old map of Manila ..... Frontispiece.
Philippine Islands, colored map ..... opposite.. 49
Census map of Lingayén 15
Philippine Islands in contours of 1,000 feet, colored map.. opposite.. 51
Distribution of forests, colored map ..... opposite.. 76
Mean annual temperature, colored map ..... opposite.. 88
Mean annual rainfall, colored map ..... opposite.. 108
Plate I. Annual variation of temperature at Manila, 1880–1902, diagram 105
II. Annual variation of the efficacy of the sun's rays at Manila, diagram.. 107
III. Annual variation of rain at Manila, 1865–1902, diagram 111
IV. Rain at Manila from 1865–1902, annual rainfall in millimeters, diagram 113
V. Annual variation of rain in various places of the Philippine archipelago, of the Antilles, and of the United States, diagram 121
VI. Annual variation of the relative humidity at Manila, 1880–1902, diagram 123
VII. Thermic oscillation, hygrometric state, and nebulosity at Manila, diagram 125
VIII. Annual variation of the tension of aqueous vapor at Manila, 1883–1902, diagram 127

Page.
Plate IX. Annual progression of the winds at Manila, diagram 132
X. Semiannual progression of the winds at Manila, diagram 133
XI. Annual variation of the daily velocity of the wind at Manila, 1885–1898, diagram 137
XII. General movements of the atmosphere at Manila, diagram 147
XIII. General circulation of the atmosphere at different latitudes, diagram 151
XIV. Monthly distribution of the baguíos or cyclones in the Far East, 1880–1898, diagram 155
XV. Cyclones of the Marianas or Magallanes, map 163
XVI. Cyclones which recurve far from the meridian of Manila, map 164
XVII. Cyclones which recurve near the meridian of Manila before or after crossing it, map 165
XVIII. Cyclones of Formosa, map 166
XIX. Cyclones which recurve in the interior of Luzón, or in the China sea not far from the island, map 167
XX. Cyclones of China, Tonkin, and Cochin China, map 168
XXI. Cyclones of China, Tonkin, and Cochin China, varied a little from Plate XX, map 169
XXII. Cyclones which cross to the south of Manila, map 170
XXIII. Cyclones of the Visayas and Mindanao, map 171
XXIV. Cyclones which recurve in the China sea between the 10th and 20th parallels north latitude, crossing first to the south and then to the north of Manila, map 172
XXV. Cyclones formed in the China sea, map 173
XXVI. Cyclones formed in the Joló (Sulu) sea or the interisland waters south of Luzón, map 174
XXVII. Monthly distribution of the thunderstorms observed at Manila, 1888–1897, diagram 177
Active and dormant volcanoes, map 188
Tuff area of central Luzón, map 191
Apo volcano, outline 201
Matútum volcano, looking south, outline 202
Catarmán volcano, Camiguín Island, outline 209
Catarmán volcano, taken from sea looking southwest, previous to April 30, 1871, outline 213
Catarmán volcano after April, 1871, outline 213
Catarmán volcano in 1897 and 1902, outline 213
Bulusan volcano, looking northeast, outline 226
Taal volcano, outline 231
Banájao volcano, looking northwest, outline 240
Banájao volcano, looking east, outline 240
Relative frequency of earthquakes, map 252

ILLUSTRATIONS.

Facing page.
Supervisors of the census (Tagálogs) 20
Supervisors of the census (Visayans) 24
Supervisors of the census (Zambalan, Cagayàn, Ilocanos, Pangasinán, Pampangan, Bicol) 30
Catbalogan, capital of Sámar 31
The Legaspi-Urdaneta monument, Manila 31
Filipino family—a group of Cuyóns 31

Facing page.
General view of the Luneta, the Malacan drive, and the bastión of San Diego, Walled City, Manila 31
Typical Filipino village, Boac, Marinduque 61
The gap of Vigan, Ilocos Sur 61
Street in Balíuag, Bulacán (Tagálogs) 61
Village of Romblón 61
Descending Magat river on raft—Nueva Vizcaya 61
Mayón volcano 63
Magellan monument, island of Mactán, erected on the spot where he was killed 63
Giant forest tree of Mindanao, showing natural buttresses of trunk 63
Burí palm 63
Tree fern, province of Benguet 63
Moro watchtower, Dumaguete, Negros Oriental 63
Native boats 63
Fort Pilar, Zamboanga, Mindanao—typical early Spanish fort 68
Spanish residence where Aguinaldo was confined, Manila 68
Primitive ovens 68
View of inner harbor, Iloílo, Panay 68
Loading and discharging of vessels, Cebú, Cebú 68
General view of Camp Vicars, elevation, 3,000 feet, showing character of country about Lake Lanao, Mindanao 72
General view of Cebú, Cebú 72
Apo volcano, looking west from Dávao river 201
Mayón volcano, province of Albay 222
The green and yellow crater lakes of Taal volcano 229
Principal crater lake of Taal volcano 232
Mt. Maquíling, looking south 237
The salient Place of Arms, Parian gate, Walled City, Manila 318
Gov-supervisor Phillips and presidentes and enumerators, Cuyo, province of Paragua (Cuyóns) 449
Gov-supervisor Dichoso and presidentes, province of Isabela (Cagayanes) 449
Gov-supervisor Fávila and presidentes, province of Pangasinán (Pangasinanes) 450
Gov-supervisor Joven and presidentes, province of Pampanga (Pampangans) 450
Enumerators, province of Sorsogón (Bícols) 451
Presidentes and enumerators, province of La Laguna (Tagálogs) 451
Gov-supervisor Juan Cailles and presidentes, province of La Laguna (Tagálogs) 451
Gov-supervisor Agcaoili and presidentes, province of Ilocos Norte (Ilocanos) 452
Gov-supervisor Crisologo and presidentes, province of Ilocos Sur (Ilocanos) 452
Gov-supervisor Larena and presidentes, province of Negros Oriental (Visayans) 452
Young Negrito woman 454
Negritos making fire by rubbing two pieces of bamboo together 454
Group of Negritos, province of Zambales 454
Negrito showing filed teeth 454
Negritos in the forest, province of Isabela 454
Igorot girl, showing method of stretching hole in lobe of ear 456
Igorot woman, hair bound up with grass chaplet 456
Igorot boy 456
Igorot father and daughter 456
Igorot warrior in his prime 456
Native woman with Negrito blood (Remontado) 459

Facing page.
Young man (Remontado) 459
Girl (Remontado) 459
Native man with Negrito blood (Remontado) 459
Girl (Gaddán) 459
Woman (Gaddán) 459
Tagbanúas, comandancia of Paragua Sur 461
Bagobos, island of Mindanao 463
Maguindanao Moro—wife of Chief Ali 464
Moro women of upper class, Zamboanga 464
Dato and bride 464
Moros of Lake Lanao, Mindanao 464
Joló Moro, adult male 464
Zamboanga, Mindanao, Filipino settlement, residence of military governor 466
Moro houses at Siassi, Tapul group 466
Moro seacoast village 466
Moro village, Zamboanga, adjoining and west of Filipino settlement 466
Gov-supervisor Grant and presidentes, province of Leyte (Visayans) 495
Gov-supervisor Ortega and presidentes, province of La Unión (Ilocanos) 511
Presidentes, special agents of the census, province of Cagayán 512
Presidentes, special agents of the census, province of Cagayán (2) 512
Gov-supervisor Ramos and presidentes, province of Tárlac (Tagálogs) 515
Gov-supervisor Ocampo and presidentes and enumerators, province of Bulacán (Tagálogs) 516
Presidente of Agusan (Visayan) 522
Presidente of Oroquieta (Visayan) 522
Presidente of Misamis (Visayan) 522
Enumerators of Marinduque (Tagálogs) 522
Enumerators of Masbate (Visayans) 522
Gov-supervisor Hugo Vidal and presidentes, Cápiz, island of Panay (Visayans) 524
Gov-supervisor Locsin and presidentes, province of Negros Occidental (Visayans) 526
Gov-supervisor Climaco and presidentes, province of Cebú (Visayans) 528
Presidentes of the towns of Jaro and La Paz, with the Gov-supervisor Delgado of the province of Iloílo (Visayans) 528
Gov-supervisor Julio Llorente and presidentes, province of Sámar (Visayans). 529
Census enumerators, province of La Laguna (Tagálogs) 530
Tinguian girl spinning 532
Tinguian young woman in typical dress 532
Tinguian woman and child 532
Tinguian girl operating cotton gin 532
Gov-supervisor Pack and presidentes, province of Benguet (Igorots) 534
Enumerators, province of Lepanto-Bontoc (Igorots) 537
Exterior of house of head-hunter in Banaue, Lepanto-Bontoc, showing the skulls of enemies and water buffalo 539
Igorot chiefs of Nueva Vizcaya 539
Igorot packers on the Benguet trail 539
Igorots of the poorer class 539
Mayoyao Igorot, "headman" of Banaue 541
Igorot 541
Igorot head-hunter, Lepanto-Bontoc 541
Igorot girl in fern-leaf costume 541
Mayoyao Igorot, young woman 541

Facing page.
Gaddán house of medium height 543
Dwelling of the Mandayas, elevated beyond reach of spears 543
An Ato at Talubín—Igorots 543
Igorot house, Bagnén, Lepanto-Bontoc 543
Tiruray dancer at Cottabato 549
Ata of Dávao 549
Group of Mangyans, of Mindoro 549
Mangyan, province of Mindoro 549
Monteses, province of Misamis 549
Teacher of music and dance of the Bagobos 561
Bagobo warriors, showing elaborate costumes 561
Bagobo musicians of Dávao 561
Moro showing one way of wearing the sarong 563
Sanguil Moro warrior in brass helmet and cuirass 563
Sámal Moros, characteristic dress 563
Sámal Moro of Zamboanga 563
Malanao Moro 563
Yakan Moro 563
Moro houses on Río Grande, Cottabato, Mindanao 565
Moro split-bamboo house of common people and slaves 565
Mixed native architecture of civilized tribes. Stone and mortar substructure and wooden framework 565
Example of fine nipa structure 565
Gaddán tree house 572
A dwelling of the Mamanúas 572
Tinguian house at Padangita—a feast in progress 572

INTRODUCTION.

Authority for and Scope of the Census—Plan and Organization—Appointment and Instruction of Census Supervisors and Enumerators—Enumeration of Christian Tribes—Non-Christian Tribes—Results of the Census—Remarks on the Geography and History of the Philippines—Some Significant Facts Concerning the Population, Agriculture, Education, Mortality, Social Statistics, and Manufactures—Possible Future Effects of the Census.

The report of the Philippine Census of 1903, published in four volumes, presents the first complete returns of the population and resources of the archipelago which have yet been secured in accordance with the high standard of American census taking.

The census of the Philippine Islands was taken pursuant to section 6 of an act of Congress approved July 1, 1902, as follows:

That whenever the existing insurrection in the Philippine Islands shall have ceased and a condition of general and complete peace shall have been established therein and the fact shall be certified to the President by the Philippine Commission, the President, upon being satisfied thereof, shall order a census of the Philippine Islands to be taken by said Philippine Commission; such census in its inquiries relating to the population shall take and make so far as practicable full report for all the inhabitants, of name, age, sex, race, or tribe, whether native or foreign born, literacy in Spanish, native dialect or language, or in English, school attendance, ownership of homes, industrial and social statistics, and such other information separately for each island, each province, and municipality, or other civil division, as the President and said Commission may deem necessary: *Provided*, That the President may, upon the request of said Commission, in his discretion, employ the service of the Census Bureau in compiling and promulgating the statistical information above provided for, and may commit to such Bureau any part or portion of such labor as to him may seem wise.

Although the scope of the census is clearly indicated in this section, its main object is set forth in section 7, to wit:

That two years after the completion and publication of the census, in case such condition of general and complete peace with recognition of the authority of the United States shall have continued in the territory of said Islands not inhabited by Moros or other non-Christian tribes and such facts shall have been certified to the President by the Philippine Commission, the President upon being satisfied thereof shall direct said Commission to call, and the Commission shall call, a general election for the choice of delegates to a popular assembly of the people of said territory in the Philippine Islands, which shall be known as the Philippine assembly. After said

assembly shall have convened and organized, all the legislative power heretofore conferred on the Philippine Commission in all that part of said islands not inhabited by Moros or other non-Christian tribes shall be vested in a legislature consisting of two houses—The Philippine Commission and the Philippine assembly. Said assembly shall consist of not less than 50 nor more than 100 members to be apportioned by said Commission among the provinces as nearly as practicable according to population.

On September 11, 1902, the Philippine Commission certified to the President that—

The recently existing insurrection of the Philippine Islands has ceased and a condition of general and complete peace has been established therein; * * * the Commission recommends to the President of the United States that he order a census of the Philippine Islands to be taken by the Philippine Commission, in accordance with the provisions of said section. Be it further observed that the foregoing certificate does not and is not intended to certify that the conditions concerning the Lake Lanao Moro district, which district forms but a small part of the territory occupied by the Moros, are those of absolute and complete peace, but that, in the opinion of the Commission, the language of section 6 and the certificate therein provided for were not intended by Congress to require, before such census should be taken, that complete peace should exist in the country of the wild Moros who never have taken any part in the insurrection referred to in section 6.

Accordingly, on September 25, the President ordered the census to be taken by the Philippine Commission, and on the 30th directed that the United States Census Bureau should compile and tabulate the returns and should print and distribute the completed reports. The preliminaries required by the act of Congress thus having been complied with, it became necessary to consider at once the scope and organization of the proposed census, and at this point the undersigned, upon the request of Governor Taft, became officially connected with the work.

The act of Congress required that the census "in its inquiries relating to the population shall take and make so far as practicable full report for all the inhabitants, of name, age, sex, race, or tribe, whether native or foreign born, literacy in Spanish, native dialect or language, or in English, school attendance, ownership of homes, industrial and social statistics, and such other information separately for each island, each province, and municipality, or other civil division, as the President and said Commission may deem necessary." Thus, apart from the social, industrial, and population statistics, Congress wisely left to the Philippine Commission "the collection of such other information as the President and the Commission may deem necessary." Under this authority the Commission decided to add to the data specified by Congress the statistics of schools, agriculture, manufactures, railroads, fishing, mining, telegraph, express transportation, insurance, and banking, so that the extent of inquiry of this census of the Philippines was almost as wide as that of the Twelfth Census of the United States.

In dealing with the Christian or civilized peoples it was decided to follow American methods of census taking, and in the enumeration of the wild, or non-Christian peoples, to follow any plan found practicable. Spanish was adopted as the language of the census, and it was decided to employ Filipinos as supervisors and enumerators whenever practicable, in order to identify them with the census and test their capacity to perform duties never undertaken before, and which in this country are supposed to require at least average intelligence. It would have been natural to have adopted the Spanish method of enumeration, to which the Bureau of Statistics and the people, more especially the official class, were accustomed. This method was far easier to follow than the American, but as the census as a Spanish institution was notoriously hateful to the Filipinos, being regarded as the basis of taxation and conscription, and for that reason always incomplete and of very doubtful accuracy, the customary methods of procedure were not considered.

It may be stated for the information of those who are not familiar with the subject, that the American plan of taking the census necessitates, apart from the Bureau force, first, a specially appointed corps of supervisors, special agents, special enumerators, and enumerators, with sufficient intelligence to take charge of the fieldwork, or, in short, to collect the desired statistics; second, the division of the country to be covered into supervisors' districts having well defined geographical limits, and the subdivision of the latter into enumeration districts, equally well defined, containing approximately the number of people who can be enumerated by a single enumerator in a given time. In the collection of the required statistics, various blank forms known as schedules are used, and it is the duty of the special agent or enumerator to fill in the answers to the questions contained in them. In securing the personal statistics of the population it is neither expected nor required that the enumerator shall see and interview each person in his district, but if he does not, he must obtain his information from a reliable source. Of course, it follows that he must not only understand the questions to be asked, but must ask them so as to be understood and be able to judge of the correctness of the answers.

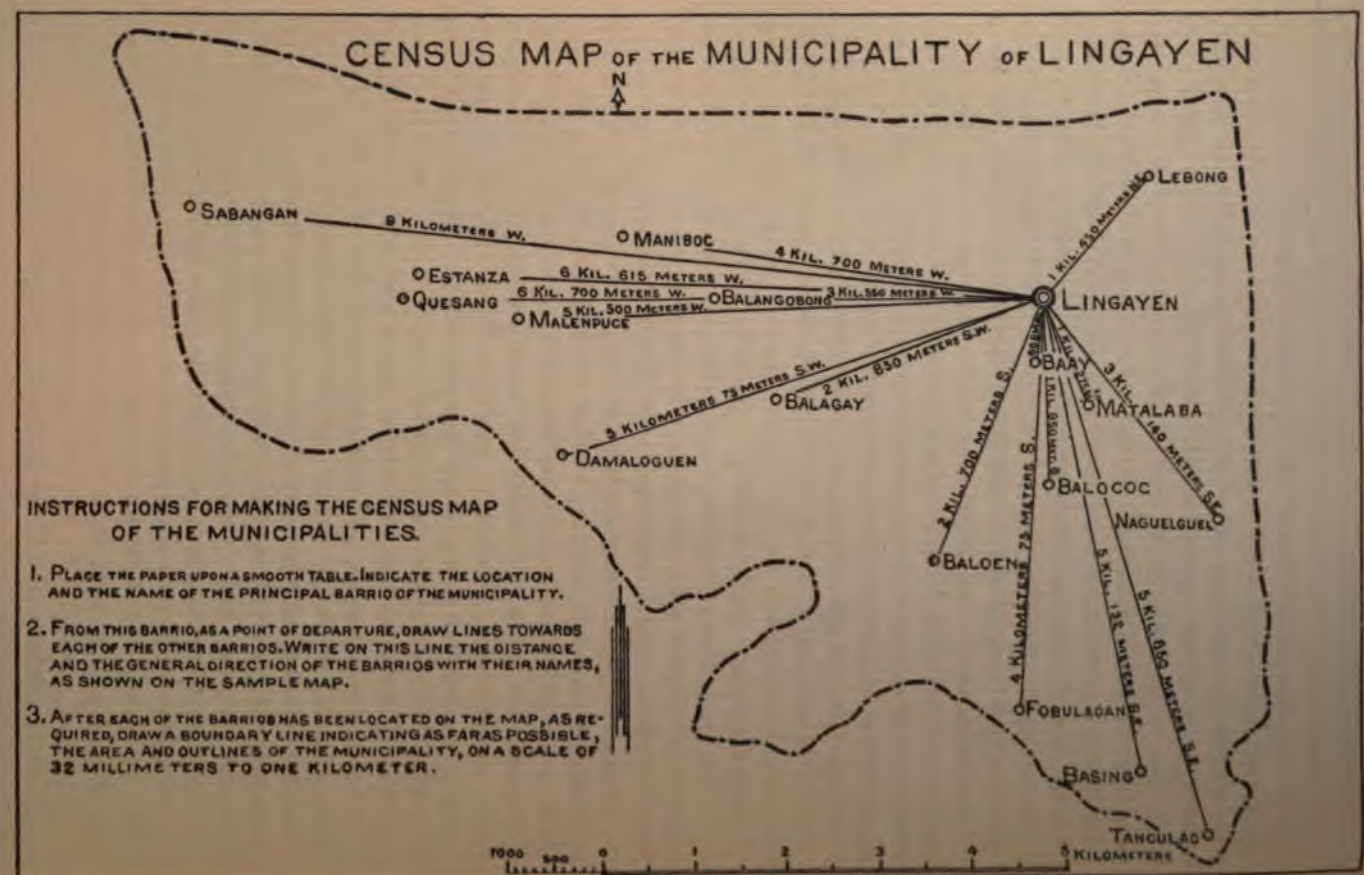
This system of organization and inquiry applied to the Philippines involved at least three essential conditions; a degree of tranquillity among the people, both civilized and wild, such as to permit the field force to accomplish its work; the possession of reliable maps for the formation of census districts; and a sufficient number of intelligent Spanish speaking Filipinos to fill the various positions.

It is interesting at this point to consider for a moment the difficulties which these conditions involved. In the opinion of the foreign residents of Manila, especially the Spanish residents, they were insur-

mountable, for it was the general belief that the unrest, ignorance, and hostility of the people made a census of any kind impracticable.

As to the attitude of the people, it had been certified to the President by the Commission that a state of peace prevailed throughout the islands—the Moros excepted—which was correct. Organized, open, and armed opposition to the United States had ceased several months prior to this. Nevertheless, in some of the provinces, bands of ladrones, or insurrectos, appeared from time to time, and by their atrocities caused great consternation among the natives, whom they robbed and murdered indiscriminately, sometimes terrorizing and looting an entire barrio of several hundred people. The majority of the provinces, however, were absolutely free from these disorders, and it was believed that the army, including the Philippine scouts, the constabulary, and the police, were amply able to cope with these marauders, or at least keep them within reasonable bounds while the census was being taken. This belief was strengthened by the knowledge that whatever their feelings might be toward the Americans, the Filipinos universally detested these disturbers of the peace and prosperity of the islands, and would aid the authorities individually when they could do so without great peril to their lives and property—and sometimes despite this peril—and collectively as a *posse commitatus*, which frequently happened. So, while this difficulty was fully appreciated, it was not regarded as likely to affect the census seriously.

The difficulty in securing reliable maps, however, was more serious. But few provincial or municipal maps could be found as the basis for a division into enumeration districts, and there was no time to prepare them in the usual way. To meet this difficulty, instructions were telegraphed early in September to all the governors of provinces to have the presidentes of the towns prepare diagrams of their respective municipalities, showing the relative location and approximate distance of each barrio from the main barrio or seat of municipal government, and, if possible, the area of the municipality—the maps to be without other topographical features. It was very soon discovered, however, that something more than written instructions would be necessary in order to obtain these maps; and accordingly model census maps of the municipality of Lingayén were sent to the governor of each province with instructions to distribute them by couriers to the presidentes, to be used by them in preparing the maps called for. A copy of this sample map is shown on the next page, and in connection with the lists of the barrios, townships, sitios, and rancherías furnished by the presidentes, enabled the census officials to divide the municipalities having more than 2,000 inhabitants and to unite adjacent ones having less than 1,000 inhabitants into enumeration districts with the requisite number of urban or suburban population. It may be said to have answered the



INSTRUCTIONS FOR MAKING THE CENSUS MAP OF THE MUNICIPALITIES.

1. Place the paper upon a smooth table. Indicate the location and the name of the principal barrio of the municipality.

2. From this barrio, as a point of departure, draw lines towards each of the other barrios. Write on this line the distance and the general direction of the barrios with their names, as shown on the sample map.

3. After each of the barrios has been located on the map, as required, draw a boundary line indicating as far as possible, the area and outlines of the municipality, on a scale of 32 millimeters to one kilometer.

purpose fully, and by no other means could the enumeration districts have been formed without great loss of time in making surveys and maps of the several provinces.

The selection of a sufficient number of intelligent Filipinos able to read, write, and speak the Spanish language as well as the various dialects of the people, to serve as enumerators and special agents, was by no means a trivial undertaking. As the civilized or Christian population numbered approximately 7,000,000, and the urban districts contained not more than 1,500 and the suburban districts not more than 1,000 inhabitants, in the neighborhood of 6,000 enumerators were needed for the enumeration of the civilized population—that is to say, one for each enumeration district, and a substitute for every 10 enumerators. In addition to this, between 1,100 and 1,200 special agents were required, and a certain number of special enumerators. It was estimated that of the 7,000,000 of civilized population, 700,000, approximately, could read and write Spanish, but according to the Archbishop of Manila not more than 7,000 belonged to the educated class. There was, therefore, some ground for apprehension on this subject, which was not relieved until after the meeting of the supervisor-governors in Manila, to which reference will be made later on.

That the Government might utilize the services of the official class throughout the islands it was decided to make all insular, provincial, and municipal officials, and such officers and enlisted men of the army serving in the Philippines, and Philippine scouts, as might be designated by the commanding general, eligible for appointment as supervisors, special agents, and enumerators. Other features of the census plan were as follows: Commissioning all census officials and requiring them to take the oath of allegiance to the United States and to the faithful discharge of their duties; guarding against any attempt on the part of supervisors to use the census for the benefit of their relatives within the fourth degree; making eight hours of active enumeration a day's work, and withholding one-half the pay of supervisors, enumerators, and special agents to insure faithful service; authorizing the Director of the Census to require all imperfect work to be done over again; and providing the usual penalties for malfeasance, neglect of duty, giving false information, signing false returns or reports, impersonating census officials to obtain information, or asking for information not called for by the schedule. Except in one particular a similar plan was employed in taking the censuses of Cuba and Porto Rico, and resulted successfully in those islands, but it was of course far more difficult to apply it to the Philippines, owing to the larger population, diversity of tribes, and the difficulties of communication between islands and provinces, and even between adjacent municipalities and barrios.

The one particular in which the Philippine census plan differed from

that followed in Cuba and Porto Rico was in making all civil officials, officers and enlisted men of the army, and scouts, eligible for appointment in the Census. In Cuba and Porto Rico this was not necessary, but in the Philippines it was considered very important, if not absolutely essential, owing to the peculiar political and social influences prevailing among the people, and to the necessity for using the army in the Moro country. In short, a census on the American plan would not have been feasible unless the governors of the organized provinces, the presidentes of the municipalities, the members of the municipal council, and, as far as possible, all of the *gente ilustrada* (the principalia) were connected with it, so that it might have behind it the support of those classes of the population so influential then and now with the masses, or common people. It was decided, therefore, that the organized provinces should constitute supervisors' districts, of which the governors should be appointed supervisors; that the presidentes of the municipalities and townships and the chiefs of rancherías should be appointed special agents and be made responsible for the census of their respective municipal divisions; and that as many of the councilors and of the principalia in general as were qualified should be appointed enumerators. For the census of the Moros and other wild people of Mindanao, it was believed that the army officers then serving among them would be more influential than Filipinos, and therefore better able to act as supervisors, and that as many datos as could be relied on should be appointed as special agents. This course was followed.

The next step was the preparation and printing of the census schedules and other blanks, and of the instructions to the supervisors and enumerators, and the purchase of the census equipment required in the enumeration. This was commenced at once, so that by the end of November the paraphernalia necessary for taking the census was on hand and ready for distribution.

In the meantime it had been decided to secure the services, as assistants to the Director of the Census, of Mr. Henry Gannett, of the United States Geological Survey, and Mr. Victor H. Olmsted, of the Department of Agriculture, well-known statisticians, who had taken part in the censuses of Cuba and Porto Rico. They arrived December 1, in time to assist in completing the organization of the census and the instruction of the supervisors. In the division of the technical work of the census Mr. Gannett was given geography and the schedules of population, schools, and mortality; Mr. Olmsted, the schedules of agriculture, social and industrial statistics, and the special statistics—such as manufactures, commerce, insurance, etc.—while the Director assumed the responsibility of the organization and administration of the census,

the descriptive matter of the census report, and its final preparation for publication.

Owing to the many technicalities of the census and the difficulty of sending adequate explanations to all points, either by mail or telegraph, it was thought advisable to give the provincial governors early intimation of what was expected of them, and to assemble them in Manila for a course of instruction in their duties as supervisors. Accordingly, on November 5, they were notified by the civil governor that they had been appointed supervisors, the appointment to date from December 1, at a salary of $150 gold per month in addition to their salaries as governors; that they must signify their acceptance and report to him in person in Manila about December 15. They were directed to make in the meantime a careful study of the population and geography of their provinces, inclusive of attached islands, and to be prepared to recommend enumeration districts on the basis of one district to every 1,500 urban and to approximately every 1,000 of the suburban or rural Christian population, and to bring with them a list of native enumerators able to speak, read, and write Spanish and to speak the dialect of their districts, and a list of substitutes at the rate of one for every ten enumerators. They were also required to bring with them the census maps ordered October 7, and lists of the municipalities and barrios, with their population, both Christian and non-Christian, as far as practicable.

Knowing that the special agents and enumerators would require the same kind of instruction as the governors, the latter, on November 17, were directed to summon the presidentes in their provinces to meet them at the respective provincial capitals on or about January 15; and if, for any reason, a presidente was unable to come, to substitute for him a vice presidente, or other Spanish speaking member of the municipal council, the object being to give them the census pouches, portfolios, and blanks and to instruct them in their use, so that they could become in turn the instructors of the enumerators in their respective municipalities. Where presidentes could neither read nor write Spanish, they were to be accompanied by one or two other members of the principalia or members of the council who could.

All the governor-supervisors, save Governor Trias, of Cavite, who was unavoidably detained, arrived in Manila, as directed, bringing with them their census maps, a tentative division of their provinces into enumeration districts, and lists of enumerators, special enumerators, special agents, and their substitutes. They were received formally by the civil governor and members of the Philippine Commissior who used every means to impress upon them the objects of the censu the importance of their duties, and their responsibility as superviso

under the census law. The entire scheme of the census was explained to them, orally and in writing, by the officials of the census, and during the two weeks of their stay in Manila they were as well instructed as circumstances would permit. That they might better understand the census instruction, and be prepared to teach the presidentes, they were required to fill out the schedules and other blanks, using fictitious names and hypothetical conditions, and to acquaint themselves with all the blanks to be used in the census. The tentative division of the organized provinces into enumeration districts was carefully considered and adjusted by the census maps to meet the requirements of the census act, the enumerators and their substitutes were assigned to them, and the special enumerators for all the wild tribes were selected, except those for Mindanao and the Sulu archipelago. Each of the governor-supervisors was then furnished with a correct plan for the census of his provincial district, and was required to superintend in person the packing of the census pouches and portfolios allotted to his district, and to see that the requisite number of all schedules and other blank forms, together with a certain surplus, was placed in the pouch of each enumerator, special enumerator, and special agent, and that the pouches were numbered to correspond with the numbers of the enumeration districts. Some difficulty was experienced in finding a sufficient number of enumerators who could read and write Spanish who were not related to the governor-supervisor within the fourth degree of consanguinity, and, for the province of Bohol, special legislation on this point was necessary. Many of the presidentes did not understand Spanish at all, and for the same reason, in a number of instances, enumerators had to be taken from one municipality to serve in another. This was, of course, a disadvantage, but was fully expected, as it was well known that in many of the barrios none of the inhabitants could read and write Spanish, and it was to meet this contingency that paragraph 2, section 8, of the Philippine census law was enacted.

It was not thought necessary to bring the army officers who were to supervise the census in Mindanao and the Sulu archipelago to Manila, but the census blanks, instructions, etc., were mailed to them early in January, and the Director of the Census, accompanied by Mr. Gannett, subsequently visited each one, established the supervisors' districts, and made such explanations as were essential to a complete understanding of the census within the limits of their respective districts.

As the Spanish censuses had conscription or taxation in some form as their main object, and were therefore secretly opposed by the people, who were seldom willing to give the information required by the census, and as this census had a very different purpose in view, it

was decided to state it in the proclamation of the civil governor fixing the date of the census, to quiet the apprehensions of the people, and, if possible, gain their cooperation, so that the census might be taken without interruption. Accordingly, on December 24, 1902, the following proclamation was issued by the civil governor:

In accordance with the policy of President McKinley, announced in his instructions of April 7, 1900, the Philippine Commission has extended to the people of the Philippine Islands complete autonomy in the matter of municipal government, and partial autonomy in the matter of provincial government. By actual experience the qualified electors of the Philippine Islands are learning the science of self-government. The policy of the late President McKinley has been sincerely adopted and followed by President Roosevelt; and the aim of the Commission, in accordance with his instructions, gradually to extend self-government to the people of the islands, was approved and adopted by the Congress of the United States at its last session, in the so-called Philippine act, by which provision was made for the election of a popular Philippine assembly within two years after the taking of a comprehensive census of the Philippine Islands. The taking of the census is indispensable to the calling of a general election for this popular assembly. No other object beyond the collection of the necessary data for determining the social and industrial conditions of the people, as the basis of intelligent legislative action, is involved in the taking of this census. By the terms of the census law, passed by the Philippine Commission, it will be seen that the census is to be largely in the hands and under the control of the Filipinos. The taking of the census will therefore form a test of the capacity of the Filipinos to discharge a most important function of government. The information secured by the census will form the basis upon which capital will be invested in the islands and the material prosperity of the people brought about. The census, therefore, is to be taken solely for the benefit of the Filipino people, and if they desire to have a larger voice in their own government within the near future, if they desire to demonstrate to the world a growing capacity for self-government, and if they would aid the investment of capital and the improvement of their material condition they should lend their unanimous support to the successful taking of the census.

Now, therefore, I, William H. Taft, civil governor of the Philippine Islands, in pursuance of the duty imposed on me by section 16 of the act enacted by the Philippine Commission October 6, 1902, do hereby issue this my proclamation, announcing as census day March 2, 1903, on which day the enumeration of the Christian population shall begin in all parts of the Philippine Islands, and continue until completed.

It is the expectation of the government that the enumeration of the Christian population will be carried on by the enumerators of urban districts at the rate of 50 persons per day, and of suburban or rural districts at the rate of 33 persons per day. Any reduction in any district in the rate of enumeration thus established will be made the subject of investigation by the supervisor, and unless it shall be found that such reduction in the rate of enumeration was due to causes beyond the control of the enumerator his (or her) pay for the period beyond which the enumeration should have been completed, at the specified rate, shall be withheld pending the decision of the Director of the Census.

In witness whereof, etc.

This proclamation, printed in English, Spanish, and the dialects of the Christian tribes, was read and fully explained to the governor-supervisors and by them to the presidentes when they assembled at the provincial capitals in January. The presidentes were directed to read

SUPERVISORS OF THE CENSUS.

TAGÁLOGS.

1. GOV. MAXIMINO PATERNO, CITY OF MANILA.
2. GOV. RICARDO PARAS, SUBPROVINCE OF MARINDUQUE.
3. GOV. E. DE LOS SANTOS, PROVINCE OF NUEVA ÉCIJA.
4. GOV. JUAN CAILLES, PROVINCE OF LA LAGUNA.
5. GOV. ARTURO DANCEL, PROVINCE OF RIZAL.
6. GOV. ALFONSO RAMOS, PROVINCE OF TÁRLAC.
7. GOV. PABLO TECSÓN OCAMPO, PROVINCE OF BULACÁN.
8. GOV. SIMEÓN LUZ, PROVINCE OF BATANGAS.

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and explain it to the enumerators of their municipalities, and the latter to the people as they were enumerated. It may be said that if this had not been done, and the supervisors and enumerators had not been impressed with the idea that failure to take the census would reflect seriously on the sincerity and intelligence of the Filipinos and postpone indefinitely the formation of a legislative assembly, a census according to the American plan would have been utterly impossible—so suspicious were the people and so opposed to a census in any form.

Being now fully equipped with the necessary census materials, and having learned as much in regard to their duties as their opportunities and respective abilities permitted, the governor-supervisors returned to their homes, where they met the presidentes, who had assembled in conformity with the orders, already quoted, of the civil governor. The presidentes of the municipalities along the east coast of Surigao, Sâmar, and Leyte met with some difficulty and delay in obeying this order owing to the prevalence of the northeast monsoon, which at that season blows with much force, rendering communication between steamers and the settlements along the east coast of those provinces most difficult and hazardous. Nevertheless, communication was made and they were picked up at great risk by Captain Mason, of the coast-guard steamer *Busuanga*, and Captain Fels, of the coast-guard steamer *Negros*, and were transported to and from their homes without loss of life or serious accident.

The presidentes having assembled, the census instructions and schedules were carefully explained to them by the supervisors, and they were directed to assemble the enumerators on their return home and instruct them in their duties even as they had been instructed. They were cautioned to begin the enumeration promptly on the census day in their several municipalities; to see that the enumerators did not fall behind in their work; to report and, if necessary, to replace all inefficient, absent, or disabled enumerators; and to see that the proclamation of the civil governor was thoroughly understood and communicated to the people. Finally, they were made personally responsible for the success of the census in their municipalities, and for the collection of the portfolios and schedules and their safe return to the supervisors when the census should be finished. Thus, every precaution was taken which previous experience and a knowledge of existing conditions suggested, and it seemed probable, therefore, that the census of the Christian population would be as accurate as could be expected under the circumstances.

Schedules 1 to 6 were used in collecting this information, and will be found in their appropriate places in this report.

The enumeration began promptly in all the organized provinces March 2, 1903, and was carried on without interruption, except in the

provinces of Albay, Sorsogón, Bulacán, and Rizal, where some delay was caused by the operations of ladrones. In the barrios of Balabag and Bokaue, municipality and province of Cebú, and in the municipality of Catarmán, island of Camiguín, province of Misamis, attempts were made to prevent a census by circulating malicious reports as to its object, which was alleged to be taxation. It was necessary to use the constabulary in Camiguín, and in the provinces of Albay, Bulacán, and Rizal the people of some of the municipalities left their homes and were enumerated elsewhere. In Cebú all objections to the census disappeared when the proclamation of the civil governor had been fully explained by the presidentes. Three enumerators were attacked by ladrones. One of them, Santiago Cargado, of Batangas, though seriously wounded, stood off his assailants and saved his schedules. Such devotion indicated a very high sense of honor and duty. When we consider the disturbed state of the country, due to the recent insurrection and to the other calamities which had overtaken the people, the presence of ladrones and their interferences with the census should occasion no surprise. On the contrary, it is remarkable that more of the enumerators were not molested and that there were not other instances of forcible resistance on the part of suspicious or disorderly persons. A very slight effort in this direction would have made a census of the rural districts impossible, or so prolonged as to be unreliable. The fact that no such opposition was made is conclusive evidence of the friendly attitude of the principalia in all the towns, and hence of the masses, toward the census. In making the enumeration and collecting the other statistics of the civilized population, the methods of the United States census, as already stated, were usually followed. The results will be discussed further on.

In dealing with the non-Christian or wild tribes a different course was followed, and but a single schedule, No. 7, was used. A list of these tribes, with local and correct tribal name, will be found in Doctor Barrows's sketch of the population, which appears in this volume, and is worthy of careful study by all persons interested in the tribal classification of the Filipinos. It will be observed that Doctor Barrows reduces the number of wild tribes to sixteen, and it is possible that this number will be still further reduced as we learn more about them.

These people are in various stages between almost complete savagery and dawning civilization. Undoubtedly they illustrate the social conditions prevailing generally throughout a large part of the Philippines when the islands were first colonized by the Spaniards. A few of the tribes are still charged with cannibalism, but of this there is no recent evidence from eyewitnesses, other than natives.

For the purposes of this report the wild peoples of the Philippines may be divided into four classes: Those who are essentially savage and

nomadic in their habits, such as the head-hunters of Luzón and certain of the Moros; those who are peaceful and sedentary, such as many of the Igorots; those who are peaceful, nomadic, and timid, such as the Negritos, the Mangyans of Mindoro, and the pagans of Mindanao, who, on the appearance of strangers, flee to the fastnesses of the forests and jungles, and can not be approached; and, finally, those who compose the outlaw element from the Christian towns, and are known as Monteses, Remontados, Vagos, Nomadas, Pulijanes, and Babylanes.

Such a wide difference in the state of the people suggested a variety in methods of census procedure. The greatest caution was enjoined in dealing with all the non-Christian tribes, more particularly the Moros, in order to avoid raising suspicions and active opposition, and every effort was made to make clear the peaceful purpose of the Government; but for the enumerators and special agents who visited the head-hunters and certain parts of the Moro country, armed parties were organized as escorts, and they were instructed to use force, if necessary, to protect the census officials. Happily a show of force was sufficient, and with but a single exception no hostile attempt was made to prevent the work of the census of the non-Christian tribes.

Nearly all the wild peoples have settlements more or less permanent, which are known as townships, pueblos, or rancherías, and some kind of local government. Thus, in all the organized provinces the general condition of the wild peoples, their haunts and settlements, and some of their headmen were fairly well known to the governor-supervisors, which greatly facilitated the necessary census organization and the collection of the required statistics.

In Volume II of this report a copy of the wild tribe schedule will be found. Although this schedule called for a variety of statistics more or less interesting and desirable, it was thought that the most important fact to ascertain was the number of the people, and to this everything else was made subordinate. Following the plan adopted in organizing the census of the Christian population, as many of the presidentes or headmen of the rancherías and tribes as were necessary were appointed special agents or special enumerators and instructed in the use of the schedule and the methods to be observed, although these matters were largely left to the discretion of the supervisors who were on the ground and familiar with existing conditions.

In trying to determine the number of inhabitants, several methods were adopted. The most accurate was a thorough canvass of individuals and families, in much the same way as in the enumeration of the Christian population in Schedule No. 1. Such an enumeration was carried on among the peaceful Igorots of Nueva Vizcaya, La Unión, Pangasinán, Lepanto-Bontoc, and a large part of the province of Benguet; also among a portion of the Negritos of Zambales and the Moros of

Basilan. In other cases, the number of people was counted without obtaining their names.

The population of a majority of the wild tribes, however, was estimated by counting the houses in the various rancherías, and multiplying the total number of the houses by the average number of natives per house, this average having been obtained by a canvass of the inmates of a few houses. This method was pursued among the Igorots of Bontoc and Isabela, and among many of the tribes of the southern islands. A less accurate method, which was used when the last method could not be followed, was to obtain statements of the number of people in each ranchería from the headmen, and to verify them as far as possible, by inquiries among other persons of the same settlement.

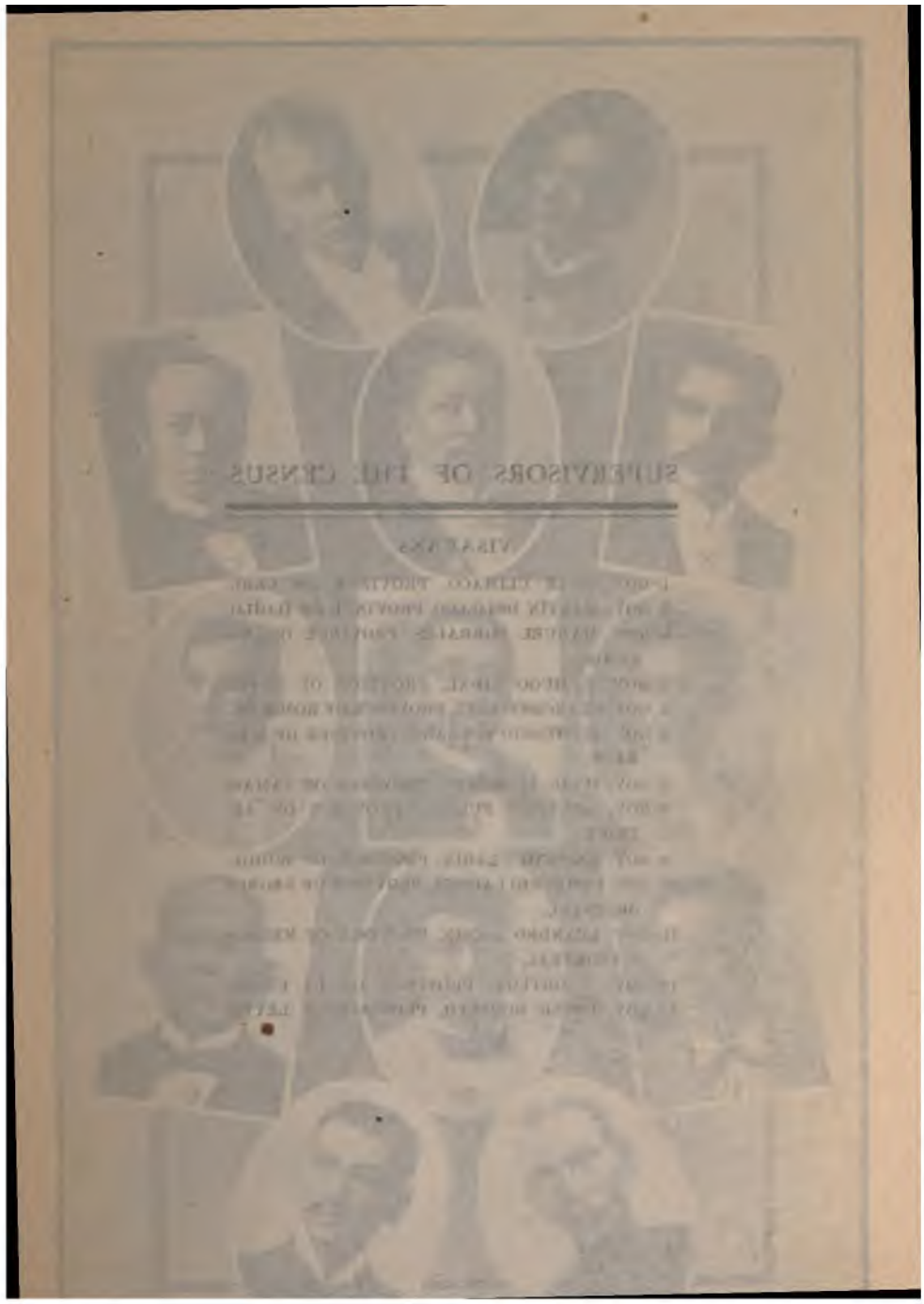
Information concerning the wild, timid peoples of the interior of Mindanao was, in the main, obtained from Moros, who hold them in a sort of dependence, and who carry on with them a so-called trade, and therefore have a fairly good idea of their numbers. In some instances, however, American army officers and civilians were found who had gained the confidence of certain of these peoples, and they undertook to visit them and obtain more correct estimates of their numbers.

In reviewing the census of Nueva Vizcaya, Supervisor Bennett said:

> The preparations for taking the census were as much work or more than the enumerating. The Igorots are very slow to move, and do not count beyond ten; after that it is so many tens up to one hundred, and beyond one hundred is an incomprehensible figure to them which they never enter into. The system adopted by me was to send enumerators some days ahead to advise the Igorots of what we wanted, and get them to count their houses, people, and domestic animals, and measure, by a sample stick given them, the land owned and cultivated by each family. They counted the animals and people by making notches on rattan sticks and bringing one bundle to represent the men, one bundle for the women, one for the chickens, pigs, and so on, together with the name of the settlement.

Capt. J. J. Pershing, who enumerated the Moros of the Lake Lanao district, said:

> After a thorough investigation it was found to be impracticable to take this census in the regular way by employing enumerators and assigning them to enumeration districts. I discussed the subject with many leading Moros, who fully understood its purpose, and they all expressed the opinion that any attempt to directly enumerate the Lake Lanao Moros in general would probably cause the people to think the census was being taken as a basis for taxation, and they would consequently give wrong information or refuse to give any. It is also probable that the lives of the enumerators would have been in danger. Enumerators would have to be selected from the Moros themselves, and it was not believed they could be relied upon to perform the work properly or intelligently, except under close supervision.
>
> It was therefore determined to interview as many well-posted Moros as possible, and secure estimates of the population from them, and later compare these estimates with each other, and with the population of a few rancherías whose inhabitants could be counted.
>
> This plan has been carefully followed, and the result is, I believe, a fairly correct



SUPERVISORS OF THE CENSUS.

VISAYANS.

1. GOV. JUAN CLIMACO, PROVINCE OF CEBÚ.
2. GOV. MARTÍN DELGADO, PROVINCE OF ILOÍLO.
3. GOV. MANUEL CORRALES, PROVINCE OF MISAMIS.
4. GOV. S. HUGO VIDAL, PROVINCE OF CÁPIZ.
5. GOV. FRANCISCO SANZ, PROVINCE OF ROMBLÓN.
6. GOV. BONIFACIO SERRANO, PROVINCE OF MASBATE.
7. GOV. JULIO LLORENTE, PROVINCE OF SÁMAR.
8. GOV. LEANDRO FULLON, PROVINCE OF ANTIQUE.
9. GOV. ANICETO CLARÍN, PROVINCE OF BOHOL.
10. GOV. DEMETRIO LARENA, PROVINCE OF NEGROS ORIENTAL.
11. GOV. LEANDRO LOCSIN, PROVINCE OF NEGROS OCCIDENTAL.
12. GOV. J. ORTEGA, PROVINCE OF LA UNIÓN.
13. GOV. PETER BORSETH, PROVINCE OF LEYTE.

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approximation. I have personally traveled around the lake, and, in addition to my estimate, have taken advantage of the estimates made by other officers. To make allowance for the population of those rancherías of which we know nothing, or have been unable to locate, I have added 5,000 to the estimated population of known rancherías.

Of the methods followed in enumerating the Moros of the Iligan district, Maj. L. W. V. Kennon wrote as follows:

Mr. Ramon Gallardo, of Misamis, was selected to enumerate the Moros near Misamis, and as far east as Point Binuni. The remaining territory was covered by myself personally, as no suitable person could be found for this purpose.

The principal sultans and datos were sent for, the object of the census explained to them, and their cooperation secured. Subsequently, visits were made to the most central points, friendly relations established with the neighboring chiefs, and lists made of the data required. These lists were taken by the chiefs to their rancherías and filled out. They were the more readily induced to do this by the payment of a small amount or by the giving of some present.

With some, however, a considerable amount of diplomacy was necessary in order to overcome their suspicions. One of the sultans of the district refused absolutely to give any information whatever. I reasoned with him in every way, but could get nothing from him—not even his objections. At last I told him we were not obtaining the data for the purpose of putting a tax on his people. At this he opened up somewhat, and when I spoke of the customs of the people and of the Americans to leave all minor questions of that character to the people it seemed that I had found the basis of his objections. He brightened up at once and said he feared that we wanted to make them dress like white folks and Filipinos; that we wanted to make them wear shoes and hats and to cut off their hair. Reassured on this point he readily gave the information desired. The above example is given to illustrate the difficulty often experienced in getting into communication with the people.

It is believed that every inhabited place in the district has been reached either directly or indirectly, but from the nature of things the result can be considered as approximate only, but it represents the best obtainable in the time at my disposal or that could be obtained except by a house-to-house enumeration, which was, of course, entirely impracticable.

Capt. James Baylies, who supervised the Cottabato district, pursued the following plan:

About the only satisfactory way of procuring the statistics was to go through the district, gathering our figures at first hand. The main objection to this plan was the expense it necessarily entailed, for going around in this district meant going with an escort for all parties, and the carrying of supplies in that most expensive of all ways—upon men's backs. We therefore had to go slowly, cutting our coat according to the cloth. Our plans contemplated visiting the more densely populated districts only, leaving the few inhabitants of the barren uplands in dense jungles until a more propitious occasion.

Owing to the natural features the district lent itself to our plan, as it is everywhere intersected by considerable waterways, and it is along these, in a measure easy to travel, that the denser settlements abound.

Our territory was divided into four subdistricts, through each of which it was the intention to send a suitable expedition for the purpose of procuring such information as circumstances would permit. Even this modest attempt would, however, have proved difficult of execution on account of the necessary expense (each of the expeditions drawing heavily upon the limited funds at our disposal * * *) if it had

not been for the interest taken in this work by one or two of the army officers of this garrison, who very kindly offered to take field parties into any localities which might be selected, an offer which I gladly accepted.

First Lieut. G. S. Turner, Tenth Infantry, made the trip south from Cottabato, passing the mountains which skirt Ilana bay, to almost the southern limits of our district, returning by sea, stopping at every coast settlement on his way.

Second Lieut. H. M. Cooper, Tenth Infantry, traversed a route through the eastern part of the district, traveling from the region of the large lakes to the vicinity of Mt. Apo.

Our third subdistrict was laid between the two just spoken of, and included the lake region with a (formerly) thickly populated territory to the westward, lying between the lakes and the mountains. This was taken charge of by our census clerk, Mr. J. J. Dunleavy.

I took the rest of our territory, taking charge of a good-sized party, and working through the country which lies in proximity to the principal rivers, visiting in about two weeks nearly all rancherías within reach, traversing a distance of about 250 miles. They are few from the fact that we passed through the territories of the most powerful datos, coming into contact but little with the minor chieftains.

It was, for obvious reasons, impossible to make an actual enumeration of the Mohammedan peoples, and the plan for obtaining at least their numbers which appeared the most feasible was to obtain by actual count in a large number of cases the average size of family per house. From this and a careful count of all houses it would be possible to compute the population. This, of course, would need continual checking, as, for instance, by frequent questioning of the well informed of the rancherías visited. This plan was carried out, and in many ways it gave, I believe, more satisfactory results than could have been secured by an attempt at an actual canvass. The great objection to this latter method was really the interminable time which must infallibly have been consumed in its execution. The Moro has some excellent qualities, but appreciation of the value of time is certainly not one of them. The asking of the most necessary questions, such, for instance, as those given in Schedule 7, would, at any rate, or the obtaining answers to them, frequently take up a full hour of our time at one Moro's house. Quite evidently this was too time-consuming a method to be of much use with a population of perhaps 30,000, especially since the work had to be completed in two or three weeks. Again, some of the necessary questions the Moros wouldn't answer at all; for instance, no Moro will tell his own name under any circumstances. I therefore thought that a careful count of all visible houses would give a basis for fairly accurate work, and that such a plan was about all that was open to us. With my own party a careful canvass was made of more than 300 houses. These houses were taken at random and were scattered over a wide area, and we made every effort to secure complete statistics concerning them, inhabitants being counted, cultivated fields roughly measured, etc. Something of the same sort was followed by all the other parties. My own inquiries convinced me that each Moro household might be expected to contain on the average something more than 6 people, and I could not find that polygamous marriages raised this average at all appreciably. These conclusions, however, differ somewhat from those arrived at by some of our other workers, but I have made no attempt to change their figures, obtained upon the spot, to make them conform to my theories.

Capt. K. W. Walker, supervisor of the Tawi Tawi district, pursued the following plan as described by him:

The scheme was to visit each island, taking with me an interpreter and a friendly dato, whom I designated and paid as a special agent, and by questioning the people and observing them, their crops, houses, manner of living and customs, gain all

the information possible. All information on this table is, more or less, approximate, but I believe it to be fairly accurate. The visiting of these islands was done under difficulties, because I had no boat to take me, and it is on this account that I did not visit all the islands personally. I sent the friendly dato and interpreter in a native boat to visit all the islands where I did not personally go. They actually landed and got information from each village on each island in the group, except the islands of Tabawán, Mantabaún, and Tambagaan, where the cholera was still raging, and the island of Lataan, and four villages on the island of Landubas, where the natives refused to allow the dato to land. The information relative to islands not actually visited was obtained from people on the neighboring islands, and, in the case of Landubas, from people of the villages of the same island. Information from all islands has been repeatedly corroborated by questioning resident natives wherever I have come across them, and by questioning the Bajaus, who live in boats, and are a continuously moving population that go everywhere. Wherever they have temporarily been found, they have been included in the population of that place.

Captain Hickok, who enumerated the Siassi Moros, said:

In numbers they (the Siassi Moros) can not count very high, nor are their estimates much better. A simple-minded folk they are, living not so very far from nature. I had with me a Moro chief of police known by the name of Hadji Osman. He was a man of considerable natural intelligence and thrift. He had received some English schooling in Borneo, where he had resided for several years and had held the office of tax collector under the British North Borneo Company. He seemed to exercise his office as priest so as to gain the confidence of the people, and he had probably more influence in the Siassi group than any other Moro. Being brought in such close touch with them, his knowledge of them, their settlements, chiefs, and numbers was freely made use of. In these estimates he could give only the number of male followers which each chief claimed to have. These numbers were subsequently by me verified and modified, as a result of personal conversations with the chiefs in question, and of visits which I made to various parts of the group.

After considering all the elements affecting the matter—some men being in polygamous relations, some being without wives at all, the reports of males including everything over 15 years of age, whether bond or free—and after discussing the matter with the best informed local authorities, as well as with the officers of my command, I arrived at the factor "4," by which the number of adult males being multiplied would give the total population, and returns were made on this basis.

The results of the census are set forth in the following pages. In addition to the tables and analytical text it was considered essential to complete presentation to include in the report of the census a brief geographical sketch of the archipelago; its climate; seismic and volcanic phenomena; its general history; a historical and ethnological sketch of the inhabitants; and a preface to each census subject covering, as far as practicable, its origin and development through Spanish and American control to the date of the census, thus presenting as accurately and graphically as sources of information permitted a statistical picture of the Philippine Islands during the past three hundred and seventy-five years. Owing to the fragmentary condition of the Spanish archives, this attempt has not been entirely successful. Many of the insular, provincial, and municipal records are either

missing or are so mutilated as to be unreliable, while all their Spanish custodians are either dead or have left the islands. A serious drawback, and one which has caused much embarrassment in testing the accuracy of results, is the entire absence of all data of the Spanish censuses of 1877 and 1887 other than the number of the inhabitants, such statistics having been sent to Spain and never made public by the Spanish Government. A part of the statistics of the civil census of 1896 were found in the Bureau of Statistics, in Manila, shortly after the capture of the city, but furnished very little information of value, except as to the number of inhabitants in certain of the provinces. Nevertheless, by laborious research and a critical examination of all available data, the conclusions reached regarding the various subjects covered by the census are believed to be fairly accurate, or at least sufficiently so for administrative purposes.

Before considering the results of the census, the attention of the reader is invited to the geographical description of the islands. Through the kindness of Mr. G. R. Putnam, representative of the United States Coast and Geodetic Survey in the islands, an effort was made to obtain an accurate list of all the islands and islets visible above high tide, with their names and areas, and this list is presented, for the first time, it is believed, in the history of the islands, together with a list of the most prominent altitudes in all the islands.

In the prosecution of this work an examination was made of all available maps, from which and other data the map of the Philippines presented in this volume was compiled especially for the census. It does not pretend to be a complete geographical map, but was prepared more for the purpose of illustrating the subject matter of the text than the general topographical conditions prevailing.

To those engaged in agriculture or commerce in the Philippines the climatology of the islands has always been of great interest and importance.

While the temperature, as indicated by the thermometer at the sea level, is practically the same throughout the entire area of the archipelago, the topographical features of the different islands, and the longitudinal direction of the mountains and hills with reference to the prevailing winds, have a marked effect on the amount of rainfall as well as on the duration of the rainy season. Therefore, while in provinces like Rizal, Batangas, and Bulacán, there is a rainy season and a dry season, whose limits can be fairly well defined, there are other provinces, like Albay, Sámar, and Surigao, where it usually rains at short intervals throughout the entire year, and where, as a consequence, the climate is more especially adapted to the cultivation of certain important crops than in other provinces.

The prevalence of typhoons, or, as they are called in the Philippines,

"baguios," during the summer months, frequently with disastrous results to the shipping, has always been the cause of much apprehension to the owners of vessels and to shippers, but with the establishment of the meteorological department of the Manila observatory in 1865, and the systematic study of these storms, which was commenced by Father Faura, S. J., at that time, and carried on in later years by Father Algué, S. J., the laws governing their origin and movement have been so fully established that their progress, duration, and intensity can now be predicted with great accuracy, and timely notice of their approach be given wherever there is a telegraph station. For a history of the development of this very important public service, the reader is referred to the account in Volume IV of the Report of the First Philippine Commission to the President, January 31, 1900.

It is sufficient to say here that all important ports in the Philippine Islands now have weather observers who are in telegraphic communication with the central weather bureau in Manila, to which daily reports of the state of the thermometer, barometer, and the direction and force of the wind are telegraphed.

The cable communication recently established with Guam, not far from which typhoons originating in the Pacific are supposed to form, will add greatly to the accuracy of the predictions, and will admit of far earlier and more timely notice of the phenomena which precede and attend their formation and movement.

While the establishment of the Weather Bureau in Manila was primarily for the benefit of the Philippine Islands, it has proved of infinite service to shipping in all parts of the Orient from Singapore to Yokohama, from which, and from intermediate points, telegrams from the masters of vessels are often received asking information as to the condition of the weather and the probability of encountering a typhoon in the passage they have to make. In addition to this, the approach of all storms is telegraphed from Manila to Hongkong, Macao, Saigon, Shanghai, and Tokyo, so that the apprehension in regard to typhoons, born largely of ignorance as to their probable consequences, has given place to a feeling of greater security, the natural result of knowing the direction which the vortex or center of such storms will probably take, the violence of the wind, and the probable effect of the storm at any given point within the area of depression.

The interesting and scientific account of the climate and storms of the Philippines was prepared for the Philippine census report by Rev. José Algué, S. J., the Director of the Weather Bureau, Manila, whose tireless efforts in behalf of the Manila observatory, and more especially the meteorological department, which now constitutes the Philippine Weather Bureau, and whose scientific investigations and improvements in the instruments used in observing and recording

atmospheric changes and in indicating the probable path of the storms, whereby the storm center can be avoided, have made him the highest living meteorological authority in the Orient, and placed him among the foremost of the world's scientists.

The Philippine Islands lie in a volcanic belt, which stretches from northeastern Asia southwestwardly nearly to Australia, and includes the volcanic peninsula Kamchatka, the Japanese Islands, and the East India archipelago. This belt is composed in the main of volcanic rocks, and there are in the Philippine Islands several volcanoes which have been in active eruption in recent years and scores which are extinct or dormant. In recent geologic periods the islands have been subject to extensive movements of uplift and depression, and probably such movements are now in progress accompanied by earthquakes and tremors, which are very frequent and in some cases severe.

It is therefore especially fortunate that there has been maintained for many years at Manila one of the best equipped seismic observatories in the world. It contains the finest and most modern instruments for recording the force and direction of earthquake shocks, and is manned with the most skilled observers, who keep careful records of all volcanic and seismic phenomena occurring in the archipelago.

Following Father Algué's account of the climate and storms is a historical account of volcanoes and seismic centers in the Philippine Islands, written for the Philippine census report by the leading authority upon the subject, Rev. M. Saderra Masó, S. J. Father Masó has been connected with the Manila observatory for the past fifteen years, and in 1894 published the first work on Philippine seismology. He has made a careful personal examination of the active and dormant volcanoes of the Philippines and is the author of some very valuable papers on the subject.

The historical sketch prepared by Mr. T. H. Pardo de Tavera, as stated by him, is merely a résumé, and any more extended compilation would have been impracticable in a report of this character. Mr. Tavera is especially qualified, by education and experience, to write the history of the Philippines, and while the facts stated by him are generally correct, and his views are entitled to the greatest consideration, it is not thought that he has given to the religious orders in the Philippines the commendation which their efforts in behalf of the Filipinos fairly merit. A more judicial view of this subject was recently expressed by the Hon. W. H. Taft, Secretary of War, in an address delivered before the faculty and students of the University of Notre Dame, on October 5, 1904. Mr. Taft said:

Magellan, in search of spices, was the first European to land in the Philippine Islands. He lost his life near the present city of Cebú in 1521. The archipelago was not really taken possession of as a colony of Spain until 1565. This was in the reign of Philip II. The colonization of the Philippines had its motive not in gain,

SUPERVISORS OF THE CENSUS.

1. GOV. POTENCIANO LESACA, PROVINCE OF ZAMBALES (ZAMBALAN).
2. GOV. FRANCISCO DICHOSO, PROVINCE OF ISABELA (CAGAYÁN).
3. GOV. GRACIO GONZAGA, PROVINCE OF CAGAYÁN (CAGAYÁN).
4. GOV. JULIO AGCAOILI, PROVINCE OF ILOCOS NORTE (ILOCANO).
5. GOV. JUAN VILLAMOR, PROVINCE OF ABRA (ILOCANO).
6. GOV. MENA CRISOLOGO, PROVINCE OF ILOCOS SUR (ILOCANO).
7. GOV. CEFERINO JOVEN, PROVINCE OF PAMPANGA (PAMPANGAN).
8. GOV. MACARIO FÁVILA, PROVINCE OF PANGASINÁN (PANGASINÁN).
9. GOV. BERNARDINO MONREAL, PROVINCE OF SORSOGÓN (BÍCOL).

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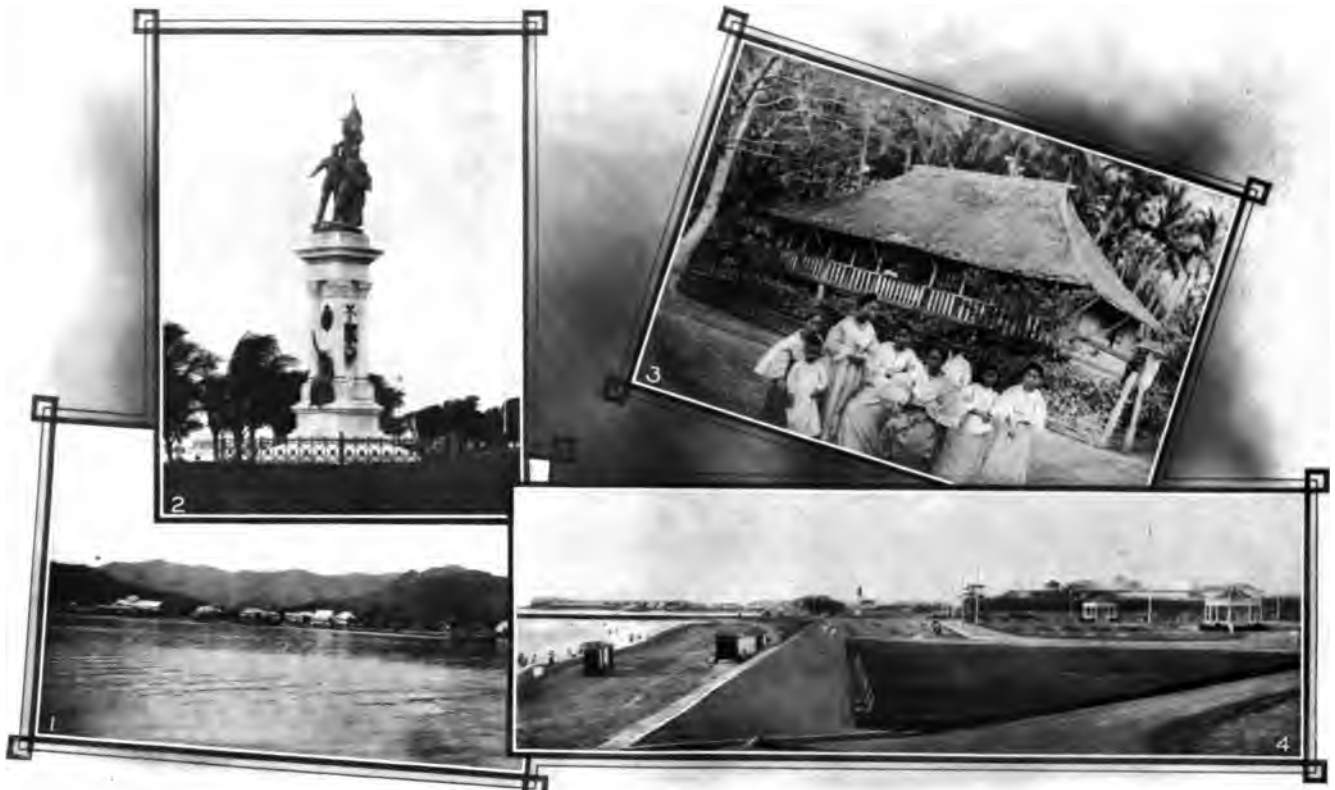


1. CATBALOGAN, CAPITAL OF SÁMAR. 2. THE LEGASPI-URDANETA MONUMENT, MANILA. 3. FILIPINO FAMILY—A GROUP OF CUYÓNS. 4. GENERAL VIEW OF THE LUNETA, THE MALACAN DRIVE, AND THE BASTIÓN OF SAN DIEGO, WALLED CITY, MANILA.

but in the desire to extend the Christian religion. The islands were indeed a Christian mission rather than a colony, and this characteristic has affected their history to the present day. It is true that Legaspi, the former alcalde of the city of Mexico, who was sent out with Friar Urdaneta, of the Augustinian Order, was directed to examine the ports of the Philippine Islands and to establish trade with the natives, and that the importance of winning the friendship of the natives was emphasized as a means of continuing the trade. But the viceroy of Philip II ordered Legaspi to treat the five Augustinian friars in his company with the utmost respect and consideration, so that the natives should also hold them in respect, "since," as he wrote Legaspi, "you are aware that the chief thing sought after by His Majesty is the increase of the Holy Catholic faith and the salvation of the souls of these infidels." In other Spanish expeditions the sum of money paid for the trip was paid by adventurers, who contributed part of the fund and who were aided from the royal treasury, the understanding being that there should be an equitable division of the profits between the adventurers and the king. There was, however, no adventurer connected with this expedition. It was purely a governmental enterprise, sent out by order of Philip II, and he paid all the expenses. A contemporary writer says that when the king was informed that the Philippines were not rich in gold and pearls, and that their occupation might not be lucrative, but the reverse, he answered: "That is not a matter of moment. I am an instrument of Divine Providence. The main thing is the conversion of the kingdom of Luzón and God has predestined me for that end, having chosen me His king for that purpose. And since He has intrusted so glorious a work to me and my crown I shall hold the islands of Luzón, even though by doing so I exhaust my treasury."

Again, in 1619, in the reign of Philip III, it was proposed to abandon the Philippines on the ground of their useless expense to Spain, and an order to that effect was given. A delegation of Spanish friars from the archipelago, however, implored the king not to abandon the 200,000 Christians whom they had by that time converted, and the order was countermanded.

I may digress here to say that some years before the American occupation, a popular subscription was taken up in Manila to pay for the erection of the statue of Legaspi, the founder of the city. Subsequently the plan was changed so as to include Urdaneta, the Augustinian friar, who accompanied Legaspi. Querol, a Spanish sculptor of note, designed the monument, and it was cast in bronze and sent to Manila. When the American forces captured the place, there were found in the custom-house the various pieces of the monument, but nothing looking to its erection had been done. The military government of Manila under General Davis decided, and properly decided, that it would be a graceful act on the part of the American authorities to erect the monument. This was done, and the monument now stands on the *Luneta*, overlooking the bay of Manila, and occupies the most prominent site in the whole archipelago. It is a work of art. The two figures are instinct with courage and energy. Legaspi on the right bears in his left hand the standard of Spain; on the left, and slightly in advance of Legaspi, Urdaneta carries in his right hand, and immediately in front of the Spanish standard, the cross. The whole, as an artistic expression, satisfies the sense of admiration that one feels in reading of the enterprise, courage, and fidelity to duty that distinguished those heroes of Spain who braved the then frightful dangers of the deep to carry Christianity and European civilization into the far-off Orient.

Under the circumstances I have described, the occupation of the islands took on a different aspect from that of ordinary seeking for gold and profit, and was not in the least like the conquests of Pizarro and Cortez. The natives were treated with great kindness and consideration. The priests exerted every effort to conciliate them. The government was first established at Cebú, subsequently at Iloílo in

Panay, and finally at Manila in 1571. There was at Manila some fighting of a desultory and not very bloody character; but Legaspi, obeying the direction of his superior, at once entered into negotiations with the natives. He found that there was no great chief in command, but that each town had its own chief and there was no other government than that of many petty rulers. They were jealous of one another, were easily induced to acknowledge allegiance to the King of Spain, and were quickly brought under the influence of the active missionary efforts of the friars who accompanied Legaspi. History affords few instances in which sovereignty was extended over so large a territory and so many people (for the island must then have had half a million inhabitants) with less bloodshed. When Legaspi's lieutenant, Salcedo, first visited Manila he found evidence that there had been an effort to convert the people to Mohammedanism, but it had not proceeded far. Undoubtedly, if Legaspi had not at that time come into the islands, all the peoples of the archipelago, instead of only 5 per cent of them, would now have been Mohammedan. The willingness of the natives to embrace Christianity, their gentle natures, and their love of the solemn and beautiful ceremonies of the Catholic Church enabled the friars to spread Christianity through the islands with remarkable rapidity.

It should be borne in mind that these are a Malay people, and that nowhere in the world, except in the Philippine Islands, has the Malay been made a Christian. In other places where the race abides, Mohammedanism has become its religion; and there is no condition of mind which offers such resistance to the inculcating of Christianity as that found in the followers of the Prophet of Mecca.

The friars learned the various dialects of the natives, and settled down to live with them as their protectors and guardians. In the first two hundred years of Spanish occupation the Crown had granted to various Spanish subjects large tracts of land called encomiendas. To those who occupied these encomiendas it was intended to give the character of feudal lords. They of course came into contact with the natives, and attempted to use them for the development of their properties. The history of the islands until 1800 shows that the friars, who had increased in number from time to time, were constantly exercising their influence to restrain abuse of the natives by these encomenderos or large landowners; and the result of their efforts is seen in the royal decrees issued at their request, which were published and became known as the "Laws of the Indies." It is very probable that the encomenderos frequently violated the restrictions which were put upon them by these laws in dealing with the natives; but there is nothing to show that the friars winked at this or that they did not continue to act sincerely as the protectors of the natives down to the beginning of the past century. Under the law a native could not be sued unless there was made party to the suit an official who was ordinarily a friar, known as "the protector of the Indian." The encomendero who had to do with the natives was not permitted to live in a town on his own estates where the natives lived. The friars exerted their influence to induce the natives to live in towns near the church and the convento, or parish house, because they thought that this would bring the natives more fully "under the bells," as they called it, or within religious influence. One of the friars laid down as a rule, which was adopted by his order and approved by the Government as early as 1850, the following:

1. "It is proper that pueblos should be formed, the missionaries being ordered to establish themselves at a certain point where the church and the parish house (convento), which will serve as a point of departure for the missions, will be built. The new Christians will be obliged to build their houses about the church, and the heathen will be advised to do so."

2. "Elementary schools should be established, in which the Indians will be taught not only Christian doctrine and reading and writing, but also arts and trades; so that they may become not only good Christians, but also useful citizens."

So great and complete became the control which the friars exercised over the natives by reason of their sincere devotion to their interests, that Spain found it possible to police the islands with very few troops.

The Spanish military force in the Philippines in 1600 was 470 officers and men. In 1636 this had increased to 1,762 Spaniards and 140 natives. From 1828 to 1896 the Spanish forces varied from 1,000 to 3,000 officers and men. In 1896, just before the revolution, the army included 18,000 men, of whom 3,000 were Spaniards; and a constabulary of 3,500 men, most of whom were natives.

The Spaniards, but not the natives, were, until 1803, subject to the jurisdiction of the Inquisition. Idolatries, heresies, and errors of belief committed by the natives were brought before the bishop of the diocese, but not before the Holy Office.

Although the natives held slaves, upon the arrival of the Spaniards the custom was discouraged by a law forbidding Spaniards to hold slaves, and by prohibiting judges from deciding in cases of dispute whether a man was a slave; so that a slave appearing before the court was ordinarily liberated.

In Cavite the friars maintained a hospital for sick sailors; in Manila, Los Baños, and Cáceres were hospitals for sick natives; in Manila, Pila, and Cáceres were hospitals for Spaniards, the clergy, and natives who could afford to pay. In Manila was maintained a hospital for sick negro slaves.

Between 1591 and 1615, the friars of the Philippines had sent missionaries to Japan who devoted themselves to the succor of the poor and needy there, and especially the lepers of that country, so that there were in Japan, when the ports of that country were closed, about 32 priests. Twenty-six of them were crucified or burned alive. When the Mikado expelled the Christians, he sent to the governor-general of the Philippines three junks laden with 150 lepers, with a letter in which he stated that, as the Spanish friars were so anxious to provide for the poor and afflicted, he sent them a cargo of men who were really sorely oppressed. These unfortunates were taken ashore and housed at Manila, in the hospital of San Lazaro, which has ever since been used for lepers.

I draw much of what I have said from an introduction by Capt. John R. M. Taylor, of the Fourteenth Infantry, assistant to the chief of the bureau of insular affairs, who is engaged in compiling original documents connected with the Philippines, with notes. Speaking of what the friars did in the islands, Captain Taylor says:

"To accomplish these results required untiring energy and a high enthusiasm among the missionaries, in whom the fierce fires of religious ardor must have consumed many of the more kindly attributes of humanity. Men who had lived among savages, trying to teach them the advantages of peace and the reasonableness of a higher life; who had lived among them speaking their tongues until they had almost forgotten their own, must have felt when promoted to the high places in the religious hierarchy, that their sole duty was to increase the boundaries of the vineyard in which they had worked so long. Spain had ceased to be everything to them; their order was their country, and the cure of souls and the accumulation of means for the cure of souls was the truest patriotism * * * . They were shepherds of a very erring flock. Spanish officials came and went, but the ministers of the church remained; and, as they grew to be the interpreters of the wants of the people, and in many cases their protectors against spoliation, power fell into their hands."

The influence of the friars was thrown against the investigation and development of the resources of the Philippines. The priests reasoned that the working of the mines in Peru and Mexico had meant suffering and death to many of the natives, and that it was better to let the mines in the Philippines, if mines there were, lie unopened. Few Spanish merchants lived permanently in the islands, and these

were chiefly engaged in the transhipment of Asiatic merchandise from Manila and had but little interest in Philippine products. The internal development of the islands was neglected. Taxes were light, and there was little money to make improvements or to establish schools. One Spanish-speaking priest among three or four thousand natives could not do much in spreading the knowledge of the language. It is probable that, apart from the convenience of the priest's learning the language of his parish instead of requiring the parishioners to learn his, it was deemed expedient from a moral standpoint, to keep the common people ignorant of Spanish. To know Spanish meant contact with the outside world, and the priests feared—not civilization, but the evils of civilization. Modern material progress seemed to the Spanish missionaries of little worth, compared with keeping their people innocent.

It ought to be noted, however, that while the policy of the friars seems to have been to keep the common people in a state of Christian pupilage, they founded a university, that of St. Thomas, which is older than either Harvard or Yale and is still doing educational work. The Jesuits, too, founded and are now carrying on several very good academic schools in Manila, and there are a few others in the islands. All the well-educated Filipinos owe their education to institutions of learning founded by friars or Jesuits or conducted under their auspices.

This brief description of the control of the Philippine Islands and of the Philippine people by a thousand Spanish friars prior to the nineteenth century at once prompts the question how it has come about that the Philippine people now manifest such hostility to those who were for two hundred and fifty years their sincere and earnest friends, benefactors, and protectors. There were several causes for the change. The intimate and affectionate relations existing between the friars and their native parishioners had led to the education of natives as priests and to the acceptance of some of them as members of the religious orders. Before 1800, of the bishops and archbishops who had been appointed in the islands, 12 were natives; but after the first years of the nineteenth century no such places of preferment were offered them, and after 1832 they were not allowed to become members of the religious orders. This change of policy created a cleavage between the native clergy and the friars, which gradually widened. In all countries in which the Roman Catholic religion has become fairly established it has been the ultimate policy of Rome to make the Church as popular as possible by appointing the priests and the hierarchy from the natives of the country; but in the Philippines, and especially in the nineteenth century, under the Spanish influence—which, by means of the concordat between the Spanish Crown and Rome, largely excluded the direct interposition of Rome in the Philippines—a different policy was followed, and the controlling priesthood was confined as much as possible to the dominant and alien race. The inevitable result of this policy, as soon as any small percentage of the Philippine people passed out from under the pupilage of the Spanish friars, was to create an opposition to them among the people.

In 1767 the Jesuits had been banished from the islands by the Pragmatic Sanction of Charles III, and their properties had been confiscated. They were at the time very powerful and rich, and the 32 parishes, to which they had administered, were now given over, through the influence of a secular archbishop, to native priests. The parishes were chiefly in the provinces of Cavite, Manila, and Bulacán. In 1852 the Jesuits were permitted to return, and the order permitting their return directed that they should receive again their 32 parishes, but in the remote island of Mindanao. Those parishes had been occupied by Recoletos, the barefooted branch of the Franciscan Order. The Recoletos demanded that if they were turned out of their parishes in Mindanao they should be restored to the parishes occupied by the native

secular clergy in Cavite, Manila, and Bulacán, which had been originally Jesuit parishes. This proposal was resisted by the native secular clergy, but was, nevertheless, carried into effect, increasing the hostility already existing on the part of the native clergy toward the friars. The bitterness of feeling thus engendered spread among the people.

Secondly, the friars had become, generally by purchase, large landowners. They held land enough to make up 250,000 acres in the Tagálog provinces in the immediate neighborhood of Manila. This land, which was rented by them to thousands of tenants, was the best cultivated land in the islands, and was admirably suited for the cheap conveyance of the crops to market. Charges were made that the friars were collecting exorbitant rents; and other difficulties arose, which, however free from blame the friars may have been, contributed very decidedly to the growing feeling on the part of the native people against their former friends and protectors.

Finally, the construction of the Suez Canal brought the Philippines into comparatively close communication with Spain, and hordes of Spanish adventurers came to the islands. Republican or liberal political views which were then spreading in Spain, leading later to the formation for a short time of a Spanish republic, reached Manila, and, finding lodgment among some of the educated Filipinos, led to a small uprising and so-called insurrection in 1870. A prominent Filipino priest named Burgos, who had been active in the controversies between the friars and the native clergy, was charged with complicity in this uprising, was convicted, and was shot on the Luneta. The Spanish Government looked to the Spanish friars, because of their intimacy with the people and control over them, to do what was necessary in ferreting out sedition or treason, supposed to be then rife. By custom, and subsequently by law, to the parish priest was given complete supervisory power over the municipal government of his town. His civil functions became very many, and one of his chief duties was supposed by the people to be to report to the central government at Manila the persons in his parish whose political views or actions were hostile to the Spanish régime. The friars thus became involved in a reactionary policy, which placed them in opposition to the people, and made them responsible in the popular mind for the severity with which the Spanish Government punished those suspected of liberal political opinions. So bitter did the feeling become that in the revolution of 1898 there were 40 friars killed and 300 imprisoned; and the latter were released only by the advance of the American forces and the capture of the towns in which they were confined.

Statistically considered, it may be said that, on the whole, the census was a success. This gratifying result was secured in spite of the fact that there were many practical difficulties which were obvious enough at the start, and became more pronounced as the enumeration proceeded. While, on the face of it, the plan of the census was quite simple, and the schedules and instructions easily understood, their practical application proved to be beyond the ability of many of the enumerators and special agents, and even of some of the supervisors. This was not due so much to a want of intelligence as to a lack of experience. In fact, a number of the native census officials were apparently incapable of reasoning from analogy or of applying the instructions to any case not covered by them directly, or of taking the initiative in meeting emergencies or in providing remedies. This

is not meant as a reflection on the natural capacity of the Filipinos, because there is plenty of that, but as illustrating a Filipino trait, more or less general, resulting from inexperience and superficial study, in consequence of which they often mistake ability to theorize freely for practical knowledge. It was this which caused some of the governor-supervisors who visited Manila to believe that they fully understood the census plan and instructions and their practical application when, as a matter of fact, they did not. As a result, mistakes more or less serious were made. Fortunately, the more serious errors of the enumerators were discovered in time to be corrected. They might have been prevented, possibly, had the Director and his assistants been able to visit all the supervisors during the progress of the work, and had the latter been able to exercise a similar supervision over the special agents and enumerators. But with the means of transportation and communication available at that time, it was impossible to do so, and this was so fully appreciated at the outset that the prevention rather than the correction of errors was the objective. Hence the efforts to insure a complete organization and the thorough instruction of the census personnel before the work began.

I have dwelt on the organization and operations of the census at length because this is said to be the first attempt, on the part of any tropical people in modern times, to make an enumeration of themselves, and because the American plan of taking a census was generally considered impossible.

In the execution of the fieldwork and the preliminary examination of the schedules, 7,627 persons were engaged, and of this number 118 were Americans, 1 Japanese, and 6 Chinese, so that it may be said, in all sincerity, that it was a Filipino census of the Philippine Islands. Of the 7,502 natives employed, 40 were women, who fully sustained the opinion of Archbishop Nozaleda that "the Filipino women are better than the men in every way." An outline of the census organization will be found in the Appendix. The names of all persons officially connected with the census in any capacity are given in the Spanish edition of the report.

Among those who have made valuable contributions to the census, without being officially connected with it, are the Hon. T. H. Pardo de Tavera and the Hon. José Luzuriaga, both of the Philippine Commission; the Hon. Tomás del Rosario and Mr. P. F. Jernegan, of the bureau of public instruction; Mr. W. S. Lyon and Mr. Regino García, of the bureau of agriculture; and Mr. Amelio A. y Llave, of the province of Albay. These gentlemen worked without compensation. All but two are natives, as are the other contributors of special articles, Doctor Barrows, Fathers Algué and Masó excepted, so that much of

the descriptive and historical portions of the report, like the enumeration and the collection of the statistics, are the work of the Filipinos.

In this, as in all other reports of the same character, the first and most important subject is the population. As to the total number of the civilized population, there had never been much question among Spanish officials, the various civil and parochial censuses being quite accurate. But in respect to the number of uncivilized or wild peoples, some difference of opinion prevailed, and, as shown by the results of this census, some inaccuracy also, the tendency being to exaggerate the number far beyond reasonable or probable limits. For example, the number of Moros has been recently stated by a prominent Spanish official in the Philippines to be in the neighborhood of 700,000, nearly three times as many as were found. This probably accounts, in some measure, for the large estimates of the total population of the islands, which has been put as high as 10,000,000, of which 2,000,000 were said to belong to the wild tribes.

From the reports of the supervisors already quoted, it is apparent that the census returns of the wild tribes differ greatly, some being more accurate and complete than others, depending on the plan followed in making the enumeration. Taken as a whole, the estimates are probably within 10 per cent of the true number. It is quite certain that the number has not been overstated, but in the case of some tribes possibly it has been understated, so that the true number of wild people may be somewhat larger than represented. It is certain that a close estimate of the number of Negritos and Igorots has been made. The probable error in the number of Moros is considerable, but that for the wild tribes of the interior of Mindanao, known as Subanos, Bagobos, Manobos, Mandayas, etc., and the Mangyans of Mindoro is the greatest.

The most significant fact concerning the wild peoples is the reclassification and reduction in the number of tribes made by Doctor Barrows, to which reference has been made. As our investigations proceed and we are brought into closer and more frequent contact with them, this number will, no doubt, be still further reduced, although the local tribal names and dialects will probably continue long after all other ethnological distinctions have been removed.

Of the other statistics concerning them but little need be said. All the people follow agricultural pursuits in some form or other, as all plant and raise the camote. This vegetable grows in all the islands and at all seasons, one crop succeeding another. This lends itself to the nomadic habits of the Negritos and Mangyans, whose annual journeys are so arranged that they can visit successively the camote patches.

They usually remain in each place until the crop is nearly exhausted, when they plant and move to another patch.

The habits, customs, and personal characteristics of the wild tribes are fully described under Population. They are in all stages of barbarism, clinging tenaciously to ancient superstitions and customs, but are gradually yielding to the active, humane, and just influences of American occupation. Even some of the Negritos show signs of a more settled life.

Up to this time 447 townships have been organized, and among them are the Negritos of the former comandancia of Infanta. Under this simple political organization the wild tribes receive their first lessons in local self-government, of which they had no previous conception. It is a most excellent plan for dealing with them, and, together with the abolition of involuntary labor without compensation, has helped materially to improve their condition. But many years must elapse before they abandon their wild ways, more especially the Moros, as they can usually find a sanction for their conduct in their religion, to which they cling, theoretically, at least, with all the tenacity of wild fanatics.

It is probable that the margin of error in the number of civilized Filipinos, Chinese, and other foreigners does not exceed a fraction of 1 per cent. It was feared that quite a large number would try to avoid the enumeration, for reasons already stated. But except in the few instances before mentioned, there is no evidence of such an intention. On the contrary, several remote and obscure barrios or sitios which were not found in the original lists prepared by the supervisors, and which had been overlooked apparently, sent runners to notify the census officials that they had not been enumerated. On account of the absence of well-defined boundaries between municipalities and barrios, some apprehension was felt as to a duplicate enumeration, but this was obviated by posting a printed notice of the enumeration on every house, boat, or other place occupied as a dwelling, which was not removed until the census was at an end.

Owing to exaggerated official estimates, the number of Chinese, especially in Manila, was supposed to be much larger than was found to be the case, and consequently some doubt was expressed as to the accuracy of the census count. There is little doubt, however, of the correctness of the census figures.

Carlos Palanca, a Christian Chinaman, the most prominent Chinese merchant in the islands, and for forty-three years a resident, in his testimony before the Schurman Commission, stated that he had twice been appointed Chinese captain, or headman of the Chinese, and prior to American occupation was acting Chinese consul; and that he had

40,000 Chinese under him, which included all in the Philippines, of whom 23,000 were in Manila at that time, June, 1899. As every Chinaman who arrived in or left the islands was registered by the Chinese captain, these figures were probably correct. From the records of the collector of the Philippine Islands it was learned that from January 1, 1899, to June 30, 1903, 49,346 Chinese arrived in the Philippines and 40,334 departed, making a net gain of 9,012, or a total of 49,012 to be accounted for. Deducting the number that arrived in the first five months of 1899 and in the four months following the census, and those who probably died during the period in question, we have approximately 9,000 Chinese, or 40,200 Chinese to be accounted for. The census gave, for the Philippines, 41,000 Chinese, or a surplus of about 800, which may be considered a close approximation in any census of the Chinese.

By consulting the table of occupations it will be seen how few Chinese are employed either as farmers or farm laborers. They are chiefly engaged as small storekeepers and as intermediaries between the foreign merchants and the natives. They will, however, enter into competition with the natives in any gainful occupation.

Of other data given in the schedules of population concerning the civilized or Christian people, the most important are the large number engaged in agriculture as compared with all other occupations, the large number of illiterate and uneducated people—greater than in Cuba, and about equal to the number in Porto Rico—the small number of consensual marriages as compared with the number in either Cuba or Porto Rico, and the general tendency of the Christian people to establish and own their homes, no matter how humble.

The proportion of defectives—that is, the insane, blind, deaf, and deaf and dumb—was materially larger than in the United States. This may represent properly the relative conditions in the two countries, or it may be that a fuller enumeration was obtained in the Philippine census than has ever been obtained by the United States census.

The characteristics of the Christian Filipinos, described in this volume, were obtained from persons who, on account of personal contact with them, were thought competent to express an opinion. A great deal more might be written about them, but any opinion which may be formed regarding them, unless based on experience and close observation, would prove of very little value.

Among the great drawbacks to their progress are the superstitions which seem to permeate the entire race. It is needless to say that they interfere with the daily affairs of life and are the cause of much unnecessary anxiety and suffering, and sometimes of serious crimes. Fortunately they will disappear as the people become more intelligent

and rational and therefore less inclined to believe in bogies of any kind.

It may be said that the Filipinos are generally subordinate to lawful authority, that, under competent officers, they make excellent soldiers, and will, in the course of time, it is believed, make good citizens. In fact, it is not too much to expect that, under the guidance of a free, just, and generous government, the establishment of more rapid and frequent means of communication, whereby they can be brought into more frequent contact with each other, and, with the general spread of education, the tribal distinctions which now exist will gradually disappear and the Filipinos will become a numerous and homogeneous, English speaking race, exceeding in intelligence and capacity all other people of the Tropics.

Schedule No. 2 covers agriculture. As compared with the total area of the islands the amount of land under cultivation is small, but it should be remembered that the islands of Mindoro, Paragua, and Mindanao, which are among the largest of the group, are very little cultivated. Again, the methods followed, including the implements in use, are most crude, and something better must be substituted before the yield will equal the production of intelligent American farmers. Rotation in the crops, irrigation, and the use of fertilizers are almost unknown, nature receiving but little aid from artificial means.

Among the changes to be made will be, probably, the introduction of the American mule and the substitution of American cattle for the Indian humped cattle. That cattle raising may become a profitable industry there is no question, as there are large areas of grazing land suitable for cattle ranches, and horses, mules, and cattle thrive in the climate of the Philippines.

Statistics show that the great agricultural wealth of the country is in the cultivation of sugar, hemp, tobacco, and coffee. Tobacco of fine quality is raised in the provinces of Cagayán and Isabela, and when carefully handled and thoroughly cured makes excellent cigars and cigarettes. The poverty of the average tobacco grower, however, compels him to dispose of his crop before it is ready for use, and this, together with the crude methods observed in handling it, has given to Manila cigars a bad reputation among tobacco connoisseurs. When the tobacco growers are able to hold their crops long enough and to resort to careful and scientific methods in its cultivation and preparation, the best Manila cigars will compare favorably with the best Habana cigars. No estimate can be made at this time of the productiveness of the islands in hemp, inasmuch as it grows wild as well as under cultivation, and there are many acres of wild hemp which have never been touched; moreover, the methods employed in stripping hemp are

of the crudest kind. This valuable crop and its full development merely await the influence of American invention and capital.

The third schedule of the census was applied to education and the schools. In the accounts of education prepared by Mr. del Rosario and Mr. Jernegan (Vol. III) the reader will find all that is needed for a complete understanding of the system of education under the Spaniards, and under the Americans up to the date of this census. As in other Spanish colonies education was in charge of the Spanish Catholic Church. The Spanish Government made ample legal provision for public schools, and the established curriculum of the primary schools was probably adapted to the condition of the children, yet very little attention appears to have been paid to the requirements of the school laws. This was especially true of the Spanish language, which was generally neglected, although teaching Spanish in all public schools was mandatory. How serious was this neglect can be realized only when we consider that Spanish was the language of the official class and the sole one having an educational literature within the reach of the people. Therefore the tribes speaking the different dialects had practically no literature and no educational facilities. In short, literacy in any of the dialects is not incompatible with total ignorance on all subjects derived from books. Hence, as shown by the census, withholding instruction in Spanish from the Filipinos kept the great mass of them in ignorance, as the number who had received secondary instruction was but 1.6 per cent of the civilized population, and of the female population but seven-tenths of 1 per cent had received a secondary education. These were able to read, write, and speak Spanish and comprised what may be called the educated class. In addition there were Filipinos who could speak Spanish without being able to read or write it; although very well known before, this fact was brought out more conspicuously by the census, especially in the selection of the enumerators.

How much this neglect of the Spanish language may be attributed to design and how much to other causes is not definitely known, but not until the return of the Jesuits to Manila in 1859, and the establishment of the Ateneo, in which Spanish was made the language of the school, was any effort made to teach it elsewhere. It is not improbable that the small amount of funds annually devoted to education by the insular government may have had something to do with the low condition of the schools and the neglect of Spanish. Thus, for the year 1893–94, 570,296 pesos were allowed; for the year 1895–96, 606,041; and for the year 1896–97, but 141,906.

The annual appropriation of the Philippine Commission for public instruction is in the neighborhood of 3,000,000 pesos, in addition to

the amounts paid by the provinces and municipalities, which add another million. There is no question that the American school system is a success, although conditions are not as satisfactory as they might be. The records show that from the very beginning of American occupation great attention has been given to free primary education, first by the military and finally by the civil government, and that the prejudices against the system which prevailed among the natives are gradually disappearing.

The fourth schedule is for mortality statistics, and is shown in Volume III. In addition to the church registers of deaths and births kept in the different parishes, the general act passed by the Philippine Commission for the organization of municipal government made it the duty of the municipal secretary to keep a register of deaths and their causes, and it was from these registers that the information called for in this schedule was obtained by municipal presidentes acting as special agents of the Census. It is believed that all the deaths which occurred during 1902 were not recorded, owing to the prevalence of cholera. It is not improbable that thousands of deaths were not reported, as many of the natives were so adverse to the sanitary measures adopted by the provincial boards of health, and so suspicious of the remedies applied that they resorted to all kinds of devices to conceal the presence of cholera in their homes, more especially when death ensued. These traits of character, combined with an inadequate supply of sterilized water and great scarcity of nutritious food in some sections, made the cholera a terrible scourge and prolonged it far beyond ordinary limits.

While the civil register called for race, sex, age, birthplace, and cause of death, no record was made of the occupation of the decedent. This omission in the records was supplied by the census officers. This defect in the registration of vital statistics has since been rectified by the Philippine Commission.

As will be observed by an inspection of the tables of mortality, the death rate during the year 1902, was abnormally high, owing to the prevalence of cholera. But notwithstanding epidemics of cholera, bubonic plague, and smallpox, the prevalence of tuberculosis, malarial fever, dysentery, beri-beri, and leprosy, the Philippine Islands are not unhealthful. Nevertheless, it is customary for every invalid who goes to the islands and breaks down, or who has contracted disease there, to charge it to the climate, usually refusing to acknowledge that he is in any sense to blame. It has been proved that the diseases already mentioned, which have been so destructive in the past, with but one exception—leprosy—yield in great measure to preventive and curative means, even among a people grossly superstitious con-

cerning the efficacy of medical treatment and violently opposed or utterly indifferent to sanitary measures of any kind. Nothing that has been done by the insular government deserves more commendation or reflects more credit on the administration than the measures taken to arrest and stamp out cholera, bubonic plague, and smallpox, to prevent the spread of leprosy, and to teach the natives how to guard against the dread diseases, tuberculosis, dysentery, and malarial fever. Only those acquainted with the native character and the insanitary conditions formerly prevailing everywhere, and particularly in Manila, can fully appreciate what has been done or that many years must pass before a majority of the native population will recognize the benefit of medical treatment and adopt sanitary rules. On the other hand, a large part of the population has already been benefited, and the experience thus gained is sure to be influential.

No better illustration of the salubrity and healthfulness of the climate of the Philippine Islands could be given than that afforded by the health report of the Army, both in war and peace. This shows conclusively that, under the intelligent management of our medical staff, and the care bestowed on the soldiers by their regimental and company officers, men who are in good health when they arrive in the Philippines, and who observe the health rules laid down for their guidance, are on the whole as nearly immune from disease as within the territory of the United States. The statistics of the Surgeon-General of the Army show that for the calendar year 1902, the number of soldiers constantly sick in the United States was 5.33 per cent of the command, and in 1903, 4.85 per cent; in the Philippines, for the same periods, the percentage of constantly sick was 6.88 and 6.62, respectively, an average difference of 1.66 per cent.

That long exposure to the climate is enervating, there can be no doubt, but the effect is easily avoided by periodical changes to a colder climate. This has been conclusively proven by the old Scotch, English, and other white residents of the islands, who, after a residence of over forty years, broken by such removals, enjoy excellent health. Formerly it was necessary to take a sea voyage in order to find relief, but with the completion of the electric railroad to Baguió, in the province of Benguet, this will no longer be needful, as the climate at that altitude will afford the requisite change.

A serious feature in the mortality among the natives is the large death rate among young children, and this can hardly be charged to the climate. As is well known, a large proportion of Filipino women are unable to nurse their children. As a result, the children begin to eat solid food long before they can digest it, and cholera infantum or convulsions end their lives. It is not difficult to predict the result

when babies three or four months of age are given rice, and even bananas and mangoes, as a regular diet. A propaganda among the women, having for its object their instruction in the care of infants, is necessary, and it is understood has been attempted, but as yet has not become general.

In the arrangement and grouping of causes of death the international classification was adopted. Capt. Charles Lynch of the Medical Department of the Army, and of distinguished service in the Tropics, was selected by the Surgeon-General to act as advisor to the census officials in deciding on the death titles to be used in the classification of those diseases peculiar to and prevalent in the Philippines.

The death rate during the year 1902 was enormous, 63.3 per thousand, which is about double the normal death rate of the archipelago. This excess was due in the main to cholera. In the following year, when the cholera had to a large extent subsided, the death rate was 47.2 per thousand.

The fifth schedule was prepared for the collection of certain social statistics, which are fully tabulated and discussed in Volume IV. With the exception of the figures in regard to the value of property, they are probably a fair and reasonably accurate account of past and existing conditions in the Philippines. The assessed value of real property had not been determined at the date of the census, and although strenuous efforts were made to obtain this data from the provincial treasurers, as a check on the figures of the census, it has not been practicable to do so. The probabilities are that the figures given are much below the true valuation of both real and personal property, as they usually are in other countries, and for reasons too well known to mention. As to the other data, the conspicuous facts are the entire absence of hospitals except in a few large cities, the existence of but twelve public libraries with 4,019 volumes, the great preponderance of churches, the small number of newspapers, and the comparatively small number of paupers and criminals. Labor and wages are burning questions, and a great deal has been said and written to demonstrate the lazy habits of the Filipinos and the worthless character of their manual labor. These strictures usually begin and end with unfavorable comparisons between Filipinos and Chinese, Americans, or other foreign populations. There are two sides to this very interesting and important question, and through the efforts of Governor Taft, the Philippine Commission, and the Army, it has been made perfectly plain to unprejudiced persons that the Filipino has greater intelligence and capacity than he has been given credit for.

What the Filipinos need in order to demonstrate their capacity as laborers is a fair opportunity under reasonable conditions, not as

rivals of the Chinese or other peoples, but of each other, as is the rule in the United States, where, if Chinamen were permitted to enter unrestrictedly into competition with American labor, the value of wages would soon reduce the average American laborer to a state of poverty. If American labor can not compete successfully with Chinese labor it should not be expected of Filipino labor, and the Filipino should not be judged by such a standard. The so-called aversion of the Filipino to labor is not believed to be so entirely natural and instinctive as it is the result of causes to which very little reference is usually made. The habits of centuries, although artificially acquired, may well be mistaken in any people for natural traits. Thus, the abuse of the Filipinos throughout the first two hundred years of their experience with the early colonists, the assiduous and ceaseless efforts of their teachers to humble their pride, stifle their ambition, and impress upon them the superiority of the dominant race, and the utter hopelessness of any kind of equality with them, have no doubt had their effect in causing indifference, shiftlessness, and recklessness.

The data concerning insurance, banking, telegraph lines and express are undoubtedly quite accurate, as they were compiled from the records. These data show the need rather than the existence of these several forms of industry. While the currency question appears to have been adjusted, and the three principal banks now in operation are regarded as safe financial corporations, there is great need for American banks, organized under the laws of the United States, with sufficient capital to finance the governmental and commercial business of the islands. That such enterprises would be very profitable to those engaged in them, there is little question, if the business experience of the foreign banks during the past six years can be relied on.

As to roads and railroads, they are conspicuous by their absence. To appreciate their enormous importance it is only necessary to consider what they have done for the United States, how very helpless we would be without them, and how soon we would revert to primitive conditions of life in all its aspects. From every point of view, civil and military, they are of paramount importance—railroads probably more than roads. Among the lines which should be built as speedily as possible is one from Manila passing northeastward through the provinces of Nueva Écija and Nueva Vizcaya, and through the valley of the Río Grande de Cagayán to Aparri. This would traverse from end to end the principal tobacco raising region in the archipelago, and would serve for the collection of this valuable product and its transportation to Manila. At present the only means of getting it is by small boats or rafts to Aparri, and thence by steamer to Manila—a slow, expensive, and at some times of the year a dangerous route.

Another route over which a road should be constructed as soon as possible is through the provinces of Cavite, La Laguna, Tayabas, and Ambos Camarines to Sorsogón. This would touch Lamón bay, one of the best ports in the islands, landlocked, affording shelter in any weather, and with a depth sufficient for the largest vessels to approach close to shore. With this line built, the distance from Manila to the United States would be shortened about 700 miles. But no great extension of the railroad system may be expected unless those who embark in this enterprise are protected in some way against loss. The necessity for railroads connecting the rich agricultural regions with the principal seaports is strongly emphasized by the great lack of docks and wharves throughout the islands. But few ports have docks at which an interisland steamer can unload, and consequently every pound of freight and all passengers must be landed in small boats. One of the great drawbacks to the commerce of the Philippines has been the lack of dock facilities in the harbor of Manila for ocean going ships. As a result, all vessels exceeding 15 feet draft must be lightered while lying at anchor some distance from the wharves and at considerable expense, more especially during the prevalence of the rainy season, when frequent typhoons interrupt the work of loading and unloading. This great obstacle to commerce will soon disappear, however, through the foresight of the Philippine Commission in making ample appropriations for the improvement of the Pásig river and the construction of an artificial harbor south of and adjoining the entrance to the river, with wharves capable of receiving and discharging at all seasons the largest seagoing vessels.

These improvements, which are to be completed by June 30, 1905, at a cost of about $4,000,000, will make Manila one of the great ports of the Orient. Direct trade with the United States will then be the rule, and not, as in the past, the exception. Manila will become a great mercantile depot and point of distribution of American and foreign merchandise of all kinds, destined for either the Philippines, China, or other points. The development of the abundant coal deposits in the Philippines, with the harbor improvements above referred to, will make Manila the chief coaling port in the East, surpassing Nagasaki in this respect, for the coal is of a quality equal to that of Japan, and the coaling facilities of Manila will be much superior to those of the Japanese city. The commercial importance of Manila will become still more apparent when the Panama canal is completed, and a considerable extension of the improvements now in progress will then, no doubt, be necessary in order to meet the demands of trade, which by that time will have been vastly increased. Then, if not be-

fore, will be fulfilled the prediction that the Philippines are to be a great market for American products. Agriculture, the domestic arts, and all other industrial pursuits are still in their infancy, and their development in harmony with the best modern methods, materials, and mechanisms is largely a question of educating the Filipino to appreciate their practical value by suitable object lessons, and of providing the capital necessary for that purpose.

The sixth schedule pertains to the products of industry or manufactures, the value of which during the year 1902 was at least 1,000 pesos for each factory. This, of course, left out of the schedule the great majority of household or family industries, and was so designed, as the available data concerning them were too unreliable and imperfect for general tabulation. They are, however, briefly considered in the text. The facts collected have been carefully examined and tabulated, and, while owing to the imperfect business records kept by the average manufacturer—when any were kept at all—it has not been possible to present in detail all the information called for in the schedule, enough has been given to show the limited extent of manufactures, and what a good opportunity exists for investments in the various industries of the islands. By referring to the tables and their analysis, it will be found that the value of manufactured tobacco far exceeded any other industrial product; that liquors and other beverages came next, and that the two combined made 38.5 per cent of the value of all manufactured products.

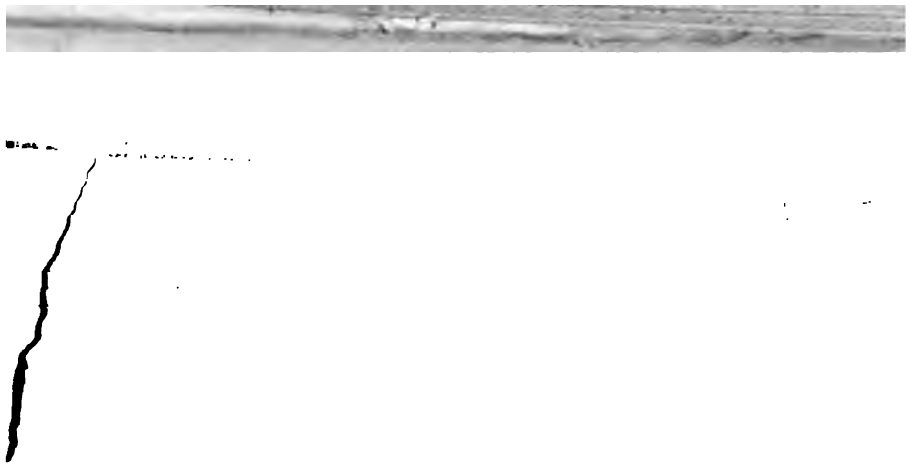
It should not be inferred from this that the Filipinos use these articles in excess, or that intemperance prevails, for while nearly the entire population use liquor and tobacco in some form, they do so in great moderation. That the state of manufactures in the Philippines is what it is should occasion no surprise when we review the colonial system of government which generally prevailed for so many centuries—under which the political and economic interests of colonies were always subordinated to those of the home country. Under this system the Filipinos received but little encouragement to engage in industrial pursuits, and manufactures were not developed.

From the subject matter of this report it will be very apparent to the reader that the great need of the Philippines is moral, material, and industrial improvement, rather than political advancement, for which they are not as yet prepared; and while this is apparent to any honest and intelligent investigator of Philippine conditions, efforts have been made from time to time to create a very different impression. In the prosecution of the census and the preparation of the report, we have sought the facts by all available means, and if the results shall be instrumental in settling these questions beyond reasonable doubt,

thus terminating false reports and hurtful agitation, and making plain the duty of the Government, as well as of all patriotic Americans toward the Filipinos, it will have achieved a lasting and beneficial purpose.

In behalf of my colleagues and of myself, I desire to express our acknowledgments and thanks to the small army of Filipinos and others who prosecuted the work in the Philippines; to the Civil Governor of the Philippines and the Philippine Commission, and the several departments and bureaus of the insular government; to the Commanding General of the Army and the Admiral of the Navy in the Philippines; to the Bureau of Insular Affairs of the War Department; and to the United States Census Bureau, for the cordial and timely assistance rendered us in the discharge of our duties.

J. P. Sanger,
Maj. Gen., U. S. A., Retired,
Director.



GEOGRAPHY.

I. PHYSICAL FORMATION.

Situation and Characteristics of the Archipelago—Harbors—Area—Mountains and Rivers—Fauna and Flora—Forests—Mineral Resources.

The Philippine Islands form a part of the great archipelago known as the East Indies. They lie southeast of the continent of Asia, nearly south of the Japanese Islands, and north of Borneo and Célebes; between the meridians of 116° 40′ and 126° 34′ east longitude, and between the parallels of 4° 40′ and 21° 10′ north latitude, that is, entirely within the Tropics. The boundaries and the limits of the group are set forth in the paragraph concerning limits in the Treaty of Paris between the United States and Spain, of December 10, 1898:

ARTICLE III.—Spain cedes to the United States the archipelago known as the Philippine Islands, and comprehending the islands lying within the following line:

A line running from west to east along or near the twentieth parallel of north latitude, and through the middle of the navigable channel of Bachi, from the one hundred and eighteenth (118th) to the one hundred and twenty-seventh (127th) degree meridian of longitude east of Greenwich; thence along the one hundred and twenty-seventh (127th) degree meridian of longitude east of Greenwich to the parallel of four degrees and forty-five minutes (4° 45′) north latitude; thence along the parallel of four degrees and forty-five minutes (4° 45′) north latitude to its intersection with the meridian of longitude one hundred and nineteen degrees and thirty-five minutes (119° 35′) east of Greenwich; thence along the meridian of longitude one hundred and nineteen degrees and thirty-five minutes (119° 35′) east of Greenwich to the parallel of latitude seven degrees and forty minutes (7° 40′) north; thence along the parallel of latitude of seven degrees and forty minutes (7° 40′) north to its intersection with the one hundred and sixteenth (116th) degree meridian of longitude east of Greenwich; thence by a direct line to the intersection of the tenth (10th) degree parallel of north latitude with the one hundred and eighteenth (118th) degree meridian of longitude east of Greenwich; and thence along the one hundred and eighteenth (118th) degree meridian of longitude east of Greenwich to the point of beginning.

In addition to the lands above delimited, the United States subsequently acquired from Spain the little group of islands known as Cagayán Sulu, and nine other small islands, lying off the north coast of Borneo.

The Philippine Islands are structurally connected with Borneo and Célebes by three isthmuses, which are partly submerged. The westernmost of these connects through Mindoro, the Calamianes, and Paragua with the northern point of Borneo. The passages between the southern point of Paragua and Borneo are shallow and much interspersed with islands—the largest of which is Balábac—and by many coral reefs. The second of these isthmuses connects with the northeastern point of Borneo and is continued through the Tawi Tawi, Siassi, Joló, and Basilan groups to the southwest point of Mindanao, at Zamboanga; thence it follows the peninsula of Zamboanga and is continued through the Visayan Islands to central Luzón. Between these two connections lies the Sulu sea with a maximum depth exceeding 2,000 fathoms. The third and easternmost of these isthmuses connects the northeastern point of the irregular island of Célebes through the Sanguil archipelago to the southeastern point of Mindanao; thence its course may be traced northward in a great curve through the easternmost ranges of Mindanao to Leyte and Sámar, and through southeastern Luzón. This incloses Célebes sea, which is much deeper than the Sulu sea.

These three lines of elevation converge in central Luzón, and these combined appear to form the mountain system in the northern part of that island.

Thus these two seas, the Sulu and Célebes, are nearly inclosed, their connections with the Pacific and with the China sea being everywhere shallow. It results that their waters are, as a rule, much warmer than those of the adjacent oceans, since warm surface water only can flow through the passages connecting them.

Considering the Philippine archipelago by itself it may be regarded as having the form of a triangle, open at the base and with its most acute angle pointing northward, this being represented by northern Luzón and the Batán and Babuyán islands. The western leg of the triangle is represented by Paragua and dependent islands, and the eastern one by the Visayan Islands and Mindanao, with the Sulu sea lying between them.

These islands, and the mountain ranges upon them, have in general a trend which may be roughly described as northward and southward, although certain of them, such as that forming the backbone of Paragua, trend nearly northeast and southwest, while others trend to the west of north and east of south. The trend of these ranges seems to indicate the direction of the forces which produced the folds and faults which brought these lands above the sea. This is apparently the only indication of system in the archipelago, and it may be merely fortuitous.

The coast line of the archipelago facing the Pacific is confined almost

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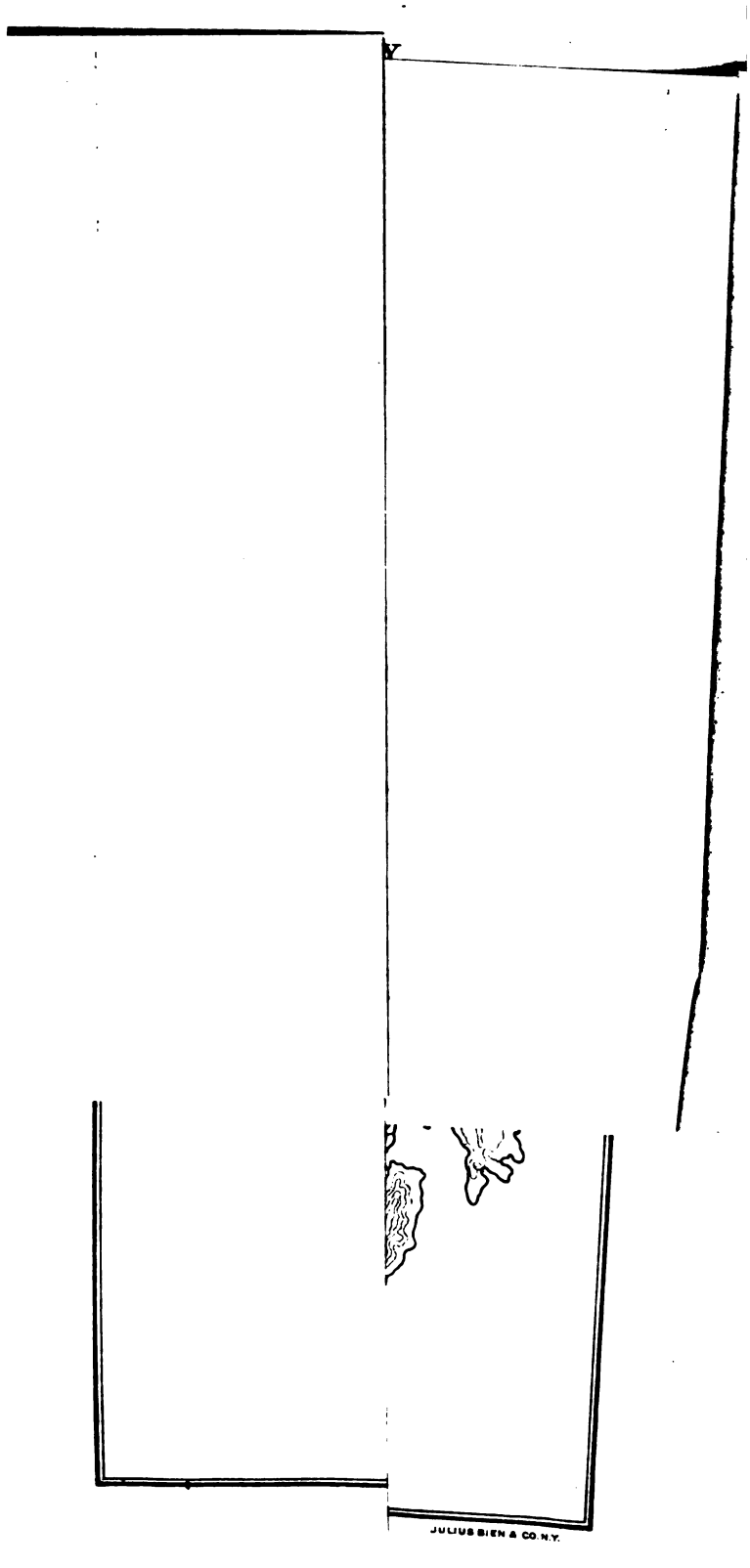
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entirely to the islands of Luzón, Sámar, and Mindanao, and the west coast to Luzón and Paragua. Within these are included most of the Visayan Islands, besides many hundreds of lesser importance. The east coast is comparatively simple. It is subjected during most of the year to the continuous force of the trade winds and a heavy precipitation. Moreover, it takes the full force of the equatorial current. This coast contains very few harbors, and its indentations of any sort are slight as compared with other parts of the archipelago.

The outlines, mountains, principal rivers and harbors, active volcanoes, provinces and their capitals, of the archipelago are represented upon the map in this volume as accurately and fully as it is possible to depict them upon the scale and with the information extant. Although Spain had jurisdiction over these islands for more than three centuries, little topographic information had been acquired regarding them, except such as was of a very general character. The coasts were badly mapped, and in many places are now known to have been miles out of position. The coast charts, made from Spanish surveys, are so inaccurate as to be, on the whole, worse than useless to mariners, while of the interior of the larger islands little was known except what could be seen from the sea. Many maps of the archipelago have been published, embodying the knowledge which had been acquired, both during the days of Spanish jurisdiction and in more recent times, but they are all very much of the same character.

Since American occupation much exploration and surveying have been done. Wherever military operations have extended, surveys have been made and maps prepared. In this way there have been produced maps covering a large part of Luzón, including the entire central portion of that island. Maps have been made of several of the Visayan Islands. The operations against the Malanao Moros have resulted in a map of Lake Lanao and its surroundings in Mindanao. The island of Joló has been mapped.

The great work of charting the coasts and harbors of the Philippines was commenced three years ago by the United States Coast and Geodetic Survey, working in cooperation with the Philippine government, and progress is being made in the preparation of accurate and trustworthy charts of these dangerous coasts. It is of the utmost importance that surveys be pushed as rapidly as possible, those of the coasts for the protection of commerce, those of the interior as an important aid in the material development of the islands.

The entire archipelago is mountainous or hilly. In the islands of Luzón, Negros, and Mindanao are broad plains and level valleys, but in general there is comparatively little level land. Tropic vegetation extends high up on the slopes and covers the lesser mountains and hills. Thus the ruggedness of a mountain region is softened into

rounded outlines. The mountain scenery is everywhere beautiful, but rarely appeals to the eye with the element of grandeur.

The archipelago is, for the most part, of volcanic origin. It contains twelve volcanoes which have been in eruption within historic times, and scores which are extinct or quiescent. Most of the surface of the islands is floored with volcanic rocks and ash. In northern Luzón there are, however, large areas underlain by metamorphic rocks, granites, schists, and the like; and several islands, notably Cebú and Bohol, are covered with a veneer of coral limestone. The occurrence of these coral limestones of very recent deposition, at various places in the archipelago and at great altitudes, as in Benguet province at a height above sea of 5,000 feet, shows that great oscillations of level have occurred at times geologically very recent. Of these oscillations there are other abundant evidences in the existence of lakes and marshes, waterfalls, and elevated beach lines, showing that the whole archipelago is in a condition of unrest.

The coasts of the archipelago are for the most part intricate—how intricate may be realized from the statement that these islands, with an area of about 115,000 square miles, have a coast line more than double the length of that of the main body of the United States. They are in part the result of volcanic action, and in part the work of coral animals. Vulcanism has brought up the land from great depths in the form of thousands of large and small islands, fringed with coral reefs, some of which have been brought to the surface, while others lie immediately below it.

HARBORS.

With such a broken coast, harbors of one sort or another are numerous. Most of them are of sufficient depth to admit large vessels, but are so difficult and dangerous of entrance, owing to the reefs which obstruct them and to the absence of lights, channel buoys, range stakes, and accurate charts, as to be of little value except to those who know them well. Owing to the alternating character of the winds which prevail throughout most of the archipelago, the northeast trade wind from October to June and the southwest wind during the rest of the year, many if not most of the harbors furnish shelter during only a part of the year.

The following table, compiled from the latest reports of the Coast and Geodetic Survey, from Spanish sources, and from the sailing directions of the United States Navy, contains a list of the principal harbors classified according to their character and the kind of vessels they will protect in all weather and at different seasons.

Classified list of

ISLAND.	HARBORS.		
	Good in all weather.		Good in southwest monsoon.
	For vessels drawing 15 feet and over.	For vessels drawing 15 feet and under.	For vessels drawing 15 feet and over.
Babuyanes		Musa bay	
Balábac	Calandórang bay	Clarendon bay, Port Ciego.	
Basilan	Port Isabela		
Bohol			
Bucás		Port Siboñga.	
Burias	Boca Engaño (small), Port Busin.	Port Busaiñga.	
Busuañga			
Cagayán Sulu			
Canahauan	Port Aguirre		
Cebú	Cebú	Port Bugut, or Carmen.	
Culión	Halsey harbor, Port Culión.		
Cuyo			
Dinágat	Port Gabó.		
Dumarán			
Joló	Dalrymple harbor		
Leyte	Tacloban		
Limbancauayan			
Luzón	Casiguran bay, Manila bay, Mariveles, Pitogo bay, San Miguel bay, Sorsogón, Súbic.	Matalvi, Port Bicobian, Port Bolinao, Port Mambúlao, Port Maricabán, Port Pusgo (Ragay gulf), Port Sual, Port Sula, Río Grande de Cagayán, at Aparri, San Vicente.	San Fernando, Sisiran bay.
Maestre de Campo	Port Concepción (small).		
Mantangule			
Marinduque	Santa Cruz	Port Banacalan.	
Masbate	Cataiñgan, Masbate or Palánog (small), Port Barrera.		
Mindanao	Ígat, Polloc harbor, Port Bañgá, Port Lebac, Port Misamis, Port Nasípit (Butúan bay), Port Sambulauan (small), Pujada bay, Santa María (small), Tumalung bay.	Agusan river, Margo Satubig, Murciélagos bay, Port Inamucán, Port Tagaguilong.	Port Surigao
Mindoro	Mangarín bay, Puerto Galera (small).		Varadero bay
Negros	Bombonón, Capcap Cove.	Danao river, South Bais bay.	
Panay	Iloilo	Port Batán	
Paragua	Malampaya bay, Port Barton, Puerto Princesa, Ulugan bay.	Malanut bay	Bacuit bay
Parasan		Parasan harbor.	
Romblón	Romblón.		
Sámar	Boroñgon, Pambujan bay, Port Libás.	Botic Island, Port Palápag.	
Sañgá Sañgá			
Sarangani	Port Tumánao	Port Bolay.	
Siargao			Port Pilar (small).
Siassi	Siassi		
Siquijor			
Tablas	Port Loog.		
Tawi Tawi	Boñgao (small), Dos Amigos.		
Ticao			San Jacinto (small)
Total 38	51	30	7

harbors and anchorages.

HARBORS—continued.			
Good in southwest monsoon—Continued.	Good in northeast monsoon.		Anchorages.
For vessels drawing 15 feet and under.	For vessels drawing 15 feet and over.	For vessels drawing 15 feet and under.	
.....	Port San Pío Quinto.		
.....	.....	.....	Dalauan bay.
.....	.....	.....	Maluso bay.
.....	.....	.....	Tagbilaran.
.....	.....	.....	Port Usón.
.....	.....	.....	Lapun Lapun.
.....	.....	.....	Canahauan Islands.
.....	.....	.....	Tinaan.
.....	.....	.....	Cuyo.
.....	.....	.....	Araceli anchorage.
.....	.....	Maibún bay	Joló roadstead.
.....	.....	.....	Maasin, Ormoc bay, Port Palompón.
.....	.....	.....	Santo Niño harbor.
Aluluyan bay, Matnog bay, Port Dimalansan, Port Gúbat, San Esteban.	Port Camagon, Port Currimao, Salomague, San Fernando.	Dirique, San Esteban, Santo Tomás.	Balayán, Batangas, Cavite, Darigayos inlet, Dilásac bay, Laguimanoc bay, Legaspi, Maubán, Panlatúan, Port Putiao, Tabaco.
.....	.....	.....	Mantangule.
.....	Nin bay	.....	Usón and Naro bays.
Port Inamucan.....	Dapitan bay, Panabutan bay, Sibuco bay.	Port Masingloc.....	Bislig bay, Cagayán, Caldera bay, Canalasan cove, Catarmán bay, Cáuit bay, Dávao gulf, Dumanquilas bay, Lavigan (Dávao gulf), Malipano (Dávao gulf), Oroquieta, Port Jiménez, Quinalang, Tágum river, Tiguma and Dupulisan anchorages, Zamboanga.
.....	Palúan bay.....	.....	Mansalay bay.
.....	.....	.....	Bacólod.
.....	.....	.....	Cápiz.
.....	San Antonio bay	.....	Culasian bay.
.....	Guiuan.....	.....	Bacod (Dolores), Calbáyog, Catbalogan.
.....	.....	.....	Chongos anchorage.
.....	.....	.....	Lamenusa.
.....	.....	.....	Port Canoan.
.....	Port San Miguel, San Jacinto (small).		
6	14	5	54

From this table it appears that all the principal islands and groups of islands have harbors for the largest vessels in all kinds of weather at all seasons, except the island of Bohol, which has no harbors, and that there are many harbors which are safe only according to the season of the year. The prevalence of the trade winds, or monsoons as they are popularly called, and the frequency, character, and path of the typhoons, or *baguíos*, are fully described in the special report which follows this geographical sketch of the islands, and which was consulted in the preparation of this table.

The dominating feature of the currents in the islands is the great Equatorial current, which, sweeping across the Pacific from east to west in a broad belt, divides east of these islands. The northern portion, which farther north is known as the Japan current, sends numerous streams through the passages among the islands, thus forming a complicated system of currents almost impossible of description. The system is still further complicated by surface drifts, set in motion by the southwest wind in the summer and fall, making currents in various directions among the islands at different times of the year.

Tides in the archipelago are exceedingly irregular, differing greatly in different places, owing to the directions in which tidal waves move, and differing also greatly at different times of the month. For details regarding them reference should be made to the sailing directions prepared by the United States Coast and Geodetic Survey.

There are few large rivers in the Philippine Islands, the Cagayán of northern Luzón, the Río Grande de Mindanao and the Agusan of Mindanao, being the only three which can be classed as large streams. These, which are in approximately the same class, have a length exceeding 200 miles, and owing to the abundance of precipitation carry large volumes of water even during the low stage. The Pampanga river of central Luzón is nearly as large, and this is followed in magnitude by the Agno of central Luzón and the Abra in the northern part of the same island. Probably there are no other streams in the islands which exceed 100 miles in length.

AREA.

Mr. G. R. Putnam, in charge of the United States Coast and Geodetic Survey in the Philippine Islands, at the instance of the Director of the Census, made a count and measurement of all the islands and islets comprised in this archipelago, including everything, however small, which at high tide appeared as a separate island. The total number thus enumerated by him was 3,141, of which 1,668 were listed by name, while 1,473 are, so far as known, without names, the whole being shown in the tables which follow this article.

It is not to be understood that this table contains all the islands, for although the number found is nearly twice as great as heretofore

known, it is certain that as more accurate charts of the archipelago are made, the number will be increased. The number is simply that shown at present by the best and most detailed charts which have been produced.

From the tables the following general facts are obtained. The total area of the islands is 115,026 square miles. It must, however, be understood that this area, while carefully measured on the best charts obtainable, is subject to considerable correction. Most of these charts are necessarily inaccurate, and it is quite probable that when the coasts of the islands have been mapped with accuracy, the area of the entire group and of most of the islands will be changed materially.

There are 2 islands with areas exceeding 10,000 square miles each, namely, Luzón with 40,969, and Mindanao with 36,292. There are 9 islands, each of which has an area of more than 1,000 square miles and less than 10,000. There are 20 between 100 and 1,000 square miles, 73 between 10 and 100 square miles, and 262 between 1 and 10 square miles. The remaining number, 2,775, or seven-eighths of all, have areas less than a square mile each.

At the date of the census, March 2, 1903, the islands were divided into 40 civil provinces, the city of Manila, and 9 military districts. Thirty-eight of the civil provinces were divided into municipalities, or municipalities and townships, and two provinces, Benguet and Lepanto-Bontoc, into townships alone, the township being a simple form of municipal government adapted to such of the non-Christian or wild tribes in the several provinces as were not sufficiently advanced for the municipality. The municipalities and townships were divided into barrios, each barrio consisting of a small settlement with outlying territory. There was another municipal subdivision in the Philippine Islands which, while it had no legal existence, was locally recognized and known to the people as a *sitio*. This may be described as a small settlement forming part of a barrio, although many sitios were said to be isolated, and not part of a barrio. Sometimes a sitio was represented by a single hacienda, and again by several. From this fact it happened that in some provinces all the municipalities were reported by the supervisors of the census as divided into barrios, others into sitios only, and others into barrios and sitios and even caserios (hamlets). In other words, the municipal divisions created by the municipal code had not, at the date of the census, adapted themselves to the ideas of the people, who in some parts of the archipelago still retain their ancient municipal designation.

The following is a list of provinces and military districts with their areas and capitals, and here should be interpolated a word of caution to the reader. The areas given are those of provinces, which in no case are the same as islands, although they may bear the same name, since the province contains, besides the main island, other

smaller associated islands. Thus, the island of Sámar, has an area of 5,031 square miles, while the province of Sámar, which contains not only this but other islands, has an area of 5,276 square miles, or 245 square miles more than the island of Sámar.

Provinces and military districts with areas and capitals.

PROVINCE OR MILITARY DISTRICT.	Capital.	Area (square miles).
Abra	Bangued	1,171
Albay	Albay	1,783
Ambos Camarines	Nueva Cáceres	3,279
Antique	San José de Buenavista	1,134
Basilan (military district)	Isabela	520
Batán	Balañga	537
Batangas	Batangas	1,201
Benguet	Baguió	822
Bohol	Tagbilaran	1,511
Bulacán	Malolos	1,173
Cagayán	Tuguegarao	5,052
Cápiz	Cápiz	1,749
Cavite	Cavite	619
Cebú	Cebú	1,939
Cottabato (military district)	Cottabato	11,786
Dapitan (military district)	Dapitan	2,015
Dávao (military district)	Dávao	9,707
Ilocos Norte	Laoag	1,330
Ilocos Sur	Vigan	471
Iloilo	Iloilo	2,027
Isabela	Ilagan	5,018
Joló (military district)	Joló	550
La Laguna	Santa Cruz	629
La Unión	San Fernando	634
Lepanto-Bontoc	Cervantes	2,005
Leyte	Tacloban	3,008
Manila city		20
Marinduque (subprovince of Tayabas)	Bóac	361
Masbate	Masbate	1,569
Mindoro	Puerto Galera	4,024
Misamis	Cagayán	3,777
Negros Occidental	Bacólod	3,130
Negros Oriental	Dumaguete	1,864
Nueva Ecija	San Isidro	2,169
Nueva Vizcaya	Bayombong	1,950
Pampanga	Bacolor	868
Pangasinán	Lingayén	1,193
Paragua	Cuyo	2,389
Paragua Sur (military district)	Puerto Princesa	2,849
Rizal	Pásig	733
Romblón	Romblón	578
Sámar	Catbalogan	5,276
Siassi (military district)	Siassi	89
Sorsogón	Sorsogón	755
Surigao	Surigao	6,988
Tárlac	Tárlac	1,205
Tawi Tawi (military district)	Bongao	400
Tayabas	Lucena	5,993
Zambales	Iba	2,125
Zamboanga (military district)	Zamboanga	3,056
Total		115,026

The original Spanish communities of the Philippines consisted of the *presidio*, or military quarters, the *pueblo*, or town, and the mission for the conversion of the natives. The ground selected for the pueblo was laid out in the form of a square or rectangle, near the central point of which was placed the *plaza*, or public square; then followed the streets dividing the pueblo into blocks. The public buildings, the church, and adjoining *convento*, or residence of the friars, and the dwellings of the officials were erected around the plaza, facing it.

On this plan nearly all the pueblos—now municipalities—of the Philippines were arranged. In most of the provinces the original pueblo became the capital, and, with some exceptions, has so remained. By referring to the outline map of the municipality of Lingayén, in the introduction to this report, some idea of the geographic arrangement of a municipality can be formed. It consists of a collection of barrios, one of which is the seat of the *tribunal*, or municipal government, and corresponds in area to a township in the United States, and the barrios, to small villages. The municipalities are all named, as are the barrios, but in referring to a municipality in ordinary conversation, the seat of government is understood to be meant. Some of these are of such size as to be called cities, like Iloílo, Cebú, Vigan, Laoag, Lucena, Batangas, etc., but there is but one chartered city, Manila, in the islands. As will be seen, the barrios are usually separate communities, although forming a single unit, and are laid out in streets, the houses being arranged on either side of the streets and usually close together, except in the rural barrios where they are well separated, each one standing in a fair-sized plot of ground in which the resident raises his crop of bananas and possibly other fruits and vegetables. The streets, as a rule, are not paved, and the roads generally are in poor condition, especially in the rainy season. For potable water, except in Manila, reliance is placed on wells and cisterns, and very little attention has ever been paid to sanitation. The houses of people of means are built of stone, brick, or wood, and their homes are provided with all available comforts. But it is safe to say that nine-tenths of the houses in the Philippines are built of bamboo, thatched with nipa, cogon, or other grasses, and are admirably adapted to the climate and to the condition of the occupants.

Since the census was taken the territory included in military *comandancias*, or districts, has been put under civil authority; Paragua Sur has been added to the province of Paragua; the province of Moro has been created with limits as set forth in Act No. 787, of the Philippine Commission, June 1, 1903, and consists of the island of Mindanao and adjacent islands (except most of the province of Misamis and all of Surigao), the island of Basilan, and all other islands south of Mindanao including the Joló, Siassi, and Tawi Tawi groups, and it thus embraces all the Moros, except a small number in the southern half of the island of Paragua.

For administrative purposes the province is divided into five districts—Cottabato, Dávao, Lanao, Sulu and Zamboanga—each under a district governor appointed by the governor of the province.

At the date of the census these districts were military districts under officers of the United States Army, and the figures of the census, as far as they relate to the Moro province, are given by military

districts and not by civil districts as now arranged. They are, however, practically identical in area.

In the detailed description of the islands, which follows, navigable rivers are scheduled, with their character and extent of navigability, from information furnished by J. W. Beardsley, consulting engineer for the Commission, and from the records of the Quartermaster-General's office.

Excepting the small islands of the Batán and Babuyán groups, Luzón is the most northern of the Philippines, lying, as it does, between the parallels of latitude 12° 30′ and 18° 40′ north, and between the meridians of longitude 119° 40′ and 124° 10′ east. It is of irregular shape, the extreme length being 530 miles and the greatest breadth, which is along the parallel of 17° north latitude, being 140 miles, while in the latitude of Manila the breadth is but 43 miles and at Lamón bay in Tayabas province, only 8 miles.

The area of Luzón is 40,969 square miles, being 10 per cent greater than Mindanao, the second island in area. Besides being the largest it is the most populous and wealthy island of the archipelago.

MOUNTAINS AND RIVERS.

Stretching along the east coast and closely following it, from the northeastern point of the island to Laguna de Bay, in latitude 14° 30′ north, is a continuous and simple mountain range, the Sierra Madre, broken by a few gaps, or passes, and no water gaps. Throughout this distance of 350 miles it forms the divide between the waters flowing to the Pacific direct and those flowing northward by the Cagayán river and westward to the China sea. Near the parallel of latitude 16° north it is joined by a short cross or east-and-west range known as Caraballos Sur, which connects it with the western range of the island, the Caraballos Occidentales. The Sierra Madre has a general elevation of from 3,500 to 4,500 feet, rising above the latter height in only a few summits. West of this great range lies the broad and fertile valley of the Cagayán river, 160 miles in length, with a breadth between the limiting mountain ranges of about 50 miles. West of this valley, and separating it from the China sea, stands a broad and complex system of mountains, known as the Caraballos Occidentales. Its length is nearly 200 miles, and its breadth, including the great spurs and subordinate ranges and ridges on either side, is fully one-third its length. The central range of the system forms the divide between the waters flowing to Cagayán river on the east and those flowing to the China sea on the west. Its northern part, where it forms the boundary between the provinces of Cagayán and Ilocos Norte, bears the name Cordillera Norte. Farther south, where it separates Abra from Cagayán and Bontoc, it is called Cordillera Central, while the southern portion, which separates Lepanto from Bontoc

COLLECTION OF G. R. PUTNAM.

1. TYPICAL FILIPINO VILLAGE, BOAC, MARINDUQUE. 2. THE GAP OF VIGAN, ILOCOS SUR. 3. STREET IN BALÍUAG (TAGÁLOGS), BULACÁN. 4. VILLAGE OF ROMBLÓN. 5. DESCENDING MAGAT RIVER ON RAFT—NUEVA VIZCAYA.

and Benguet from Nueva Vizcaya, is called Cordillera Sur. This range, although bearing the principal water divide, does not contain the highest peaks, which are found on subordinate ranges and spurs. The Cordillera Norte rises gradually southward from its northern end at Point Lacay, until at the north point of Abra province it culminates in the great summit Pagsán, 7,261 feet. At this point a heavy spur runs off to the southwest, separating Ilocos Norte and Abra. On this spur are summits of 6,200, 4,800, 4,200, and 3,600 feet, diminishing in altitude as the coast is approached. From this mountain, Pagsán, another spur or secondary range runs off to the northeast, separating the valleys of the rivers Cabicuñgan and Apáyao. Little is known concerning the height of the summits of the Cordilleras Central and Sur. In the former are peaks of 6,000 and 6,500 feet, and in the latter is Mt. Datá, 7,364 feet. It is known that a large part of the summit has a broad, level, or rolling plateau-like character, on which it is not easy to trace in detail the course of the divide. On the east many long, heavy spurs run off to the northeast, separating branches of the Cagayán river. On the west are several similar spurs running down to the coast, and in some cases paralleling it for some distance, giving the effect, when seen from the sea, of a continuous range along the coast. On several of these spurs are high peaks, such as Santo Tomás, near the municipality of the same name in the province of La Unión, 7,298 feet; Mt. Biumaca, 5,268 feet; Mt. Tantagúan, 6,382 feet; and Mt. Mitra, 5,699 feet. Among these secondary ranges is that mentioned above as separating the provinces of Abra and Ilocos Norte, which partially incloses the basin of Abra river. Another heavy range leaves the Cordillera Sur at the northeast point of Benguet, and running westward a short distance, divides into two parts, which trend, respectively, northwest and southwest, separating Benguet and Lepanto on the east from Ilocos Sur and La Unión on the west. The southern branch with the Cordillera Sur incloses the basin of the Agno river in Benguet province. At its south end the Cordillera Sur swings to the east, and, under the name of Caraballos Sur, joins the Sierra Madre or east coast range.

North of the head of Lingayén gulf the west coast strip of lowland is narrow, the mountains rising but a short distance inland. Following closely the coast in Zambales province is a high range, extending from the Gulf of Lingayén to the south end of the province. In Bataán its course is continued by two detached groups of mountains, the southern of which, Mariveles peak, an extinct truncated volcano, is a prominent feature in the landscape from Manila. The highest point is 4,615 feet. The Zambales range contains many peaks exceeding a mile in height, and for a long distance its average height exceeds 4,000 feet. West of this range and south of Lingayén gulf and the Caraballos Sur is a great valley or depression extending to the borders of Batangas

and Tayabas provinces on the south and including Manila bay and Laguna de Bay. This valley is 150 miles long, with an average width not far from 50 miles. It contains 1,750,000 people, or about two-fifths the inhabitants of the entire island. The surface is very level, nowhere, except as the bordering mountains are approached, being more than a hundred feet above sea; and is traversed by many streams, the chief ones being the Agno, from the mountains of Benguet, which flows into Lingayén gulf, the Pampanga, from the Caraballos Sur, and the Pásig which drains Laguna de Bay into Manila bay. Much of the land has been built up by alluvial deposits; is raised but a very few feet above tide, and in the neighborhood of Manila bay and Lingayén gulf is for many miles marshy and intersected by countless *esteros*, forming a most complicated network, a series of great deltas. Manila bay from its position is evidently a part of this great depression; most of it is not over 100 feet in depth, and nowhere do soundings show more than 150 feet. Laguna de Bay is everywhere very shallow, the maximum depth shown by soundings being only 20 feet. Almost in the center of this valley the extinct volcano of Aráyat rises to a height of 3,564 feet. It is entirely isolated, rising out of a low, level plain. Its summit is truncated, and its slopes have been much eroded by streams, indicating that it has long been extinct.

Southern Luzón differs greatly in its orography from northern Luzón, above described. In place of an orderly arrangement of mountain ranges and ridges, most of the relief of the southern part of the island consists of isolated volcanic peaks, distributed irregularly over the surface.

Lake Taal, in Batangas province, judging from its shape and surroundings, is the crater of an immense volcano. It has a roughly elliptic shape, with the longer axis north and south, the dimensions being 17½ by 12 miles. A rim, sharply outlined and several hundred feet in height, incloses it on all sides except on the south, where it is separated from Balayán bay by low land traversed by Taal river. Standing on the rim are several mountains of considerable height and evidently of volcanic origin. The surrounding country rises gently to the rim, the whole area thus presenting the aspect of a low, flat, truncated cone, the crater in the summit being occupied by the lake. On an island in the lake is the active volcano of Taal, 1,050 feet high, which has been in eruption frequently within historic times.

Rising from the south shore of Laguna de Bay is Mt. Maquíling, 3,724 feet, and on the southeast of the lake on the boundary between La Laguna and Tayabas provinces, are Mts. San Cristóbal and Banájao, respectively 5,000 and 7,382 feet. All these are extinct volcanoes, still showing their origin by their form, although much eroded. In the southern part of Batangas province, occupying the broad penin-

5. COLLECTION OF DEAN C. WORCESTER.

1. MAYÓN VOLCANO. 2. MAGELLAN MONUMENT, ISLAND OF MACTÁN, ERECTED ON THE SPOT WHERE HE WAS KILLED. 3. GIANT FOREST TREE OF MINDANAO, SHOWING NATURAL BUTTRESSES OF TRUNK. 4. BURÍ PALM. 5. TREE FERN, PROVINCE OF BENGUET. 6. MORO WATCHTOWER, DUMAGUETE, NEGROS ORIENTAL. 7. NATIVE BOATS.

sula east of Batangas bay, is an irregular mass of hills and mountains rising in several summits above 3,000 feet. Starting near Mt. Banájao, a range of no great height traverses the island, here very narrow, in a southeastern direction, and is continued down the peninsula west of the Gulf of Ragay. Another short but high range traverses the province of Ambos Camarines from the Bay of Lamón to San Miguel bay. In this are Mts. Labó and Bayabas, each about 5,000 feet in height. From Mt. Labó a low range parallels the west coast through Ambos Camarines and into Albay province. In the latter province it becomes higher and terminates near the town of Sorsogón, with the volcano Pocdol or Bacón, 4,667 feet. In Camarines Sur, a few miles east of Nueva Cáceres, rises Mt. Isarog to a height of 6,634 feet. This is an extinct truncated volcanic cone, covering with its slopes a vast extent of territory. It has been but little wasted by erosion, and still retains its perfect conical form.

The most prominent volcanic peak in the archipelago is without question Mayón, in the province of Albay. It rises from the sea, at the head of the Gulf of Albay, to a height of 7,916 feet. At its southern base are the towns of Legaspi, Albay, and Daraga. This is a perfect cone, symmetrical on all sides, with a small crater in the slightly truncated summit from which is constantly given forth steam and smoke. It has been in active eruption many times since Spanish occupation, and has wrought havoc among the towns about its base. There are numerous other volcanic peaks of less note in this neighborhood, among them Masaraga, 5,244 feet; Malínao, 3,066 feet; and Iriga, 4,092 feet.

In Sorsogón the dominating peak is the volcano Bulusan, 4,053 feet. This is much eroded and now presents little of its original shape. There are two smaller volcanoes now extinct on the peninsula, Culañgalan and Binluay, but this great summit, with its spurs, forms most of the relief of the peninsula.

The principal rivers of Luzón in length, drainage basin, and navigability are the Cagayán, Agno, and the Pampanga. There are many other streams, but most of them are comparatively short and of less importance.

The Cagayán river, the largest in Luzón, heads in Caraballos Sur, in the southern part of the province of Isabela; flows northeast through this province and northward through the province of Cagayán to its mouth at Aparri; has a total length of approximately 220 miles, and its drainage basin has an area not far from 10,000 square miles, or one-fourth of the area of Luzón; and is navigable, with a good pilot, for steamers drawing 3 feet to Tuguegarao, for native boats to Echague, 160 miles from its mouth, while rafts go 40 miles higher up. All of the products of the two provinces traversed by this

river are carried upon it down to Aparri for shipment. The commerce is large, consisting in great part of tobacco. The Pinacanauán river is a branch of the Cagayán, joining it at Ilagan. It is navigable for rafts for 20 miles, and for small craft for 6 or 8 miles. The Magat river is also a branch of the Cagayán, joining it at Gamú. It is navigable for small craft for 6 or 8 miles, and for rafts for 40 miles.

The Agno river rises in the northern part of Benguet province high in the mountains, and flows southward into the great central valley of Luzón, where it divides and subdivides into many channels, which find their way to Lingayén gulf at Dagupan, Lingayén, San Isidro, and San Fabián. These various channels are all navigable, but for different distances. The San Fabián branch is navigable to Manáoag; the Dagupan branch to Urdaneta; and the San Isidro branch to Rosales. A large part of the produce of the northern portion of this great valley goes down by the branches of this stream to ports on Lingayén gulf.

The Pampanga river, which is the second one in size in Luzón, rises in the northern part of the province of Nueva Écija, and flows a little west of south to its mouth in Manila bay. In the lower part of its course, where it flows through a low alluvial plain, it divides into many channels, forming an extensive delta. The most of its channels are navigable for small native craft, and, except at low water, for steamers of no considerable draft. Steamers can ascend the river from Calumpit, where the railroad crosses it, to Aráyat, and small native boats can ascend as high as Cabanatuán. The principal branch of this river is the Quiñgua, which is navigable for small boats to Norzagaray.

The Abra river rises in Lepanto-Bontoc and flows through Abra and Ilocos Sur to its mouth in the China sea near Vigan. Out of its entire length of 55 miles, 30 miles can be traversed by bamboo rafts. The Chico river is a small stream in Ilocos Sur, which is navigable for rafts to a point 8 miles from its mouth. In Ilocos Norte, La Unión and Zambales provinces there are no streams of magnitude or of importance for navigation. The same is true of Bataán province, although upon its east coast there are several short streams which can be entered for 2 or 3 miles by small native boats.

The Pásig river connects Laguna de Bay with Manila bay. Even at low water this river can be traversed by launches drawing 5 and 6 feet of water, and by the large native cargo boats known as *cascos*. The lake, though shallow, can also be traversed by these craft in all directions, and as its shores are densely populated, the traffic through the lake down the river to Manila bay is enormous. Of all the streams flowing into the lake the only one of any importance whatever is the Lumbang, which is navigable for small boats to Pagsanján, a distance

of 5 miles. The streams of Cavite and Batangas provinces are of little importance, only two of those of Batangas, the Calumpán and the Pansípit, being navigable for rafts for 5 miles.

The streams of Tayabas are short and of little value for navigation. Among them are the Lucena river, which is navigable for 3 miles to the town of Lucena; the Tambag river, which can be traversed by rafts and *bancas* to a point 2 miles above its mouth; the Calilyan, on which rafts can be taken 6 miles; the Mayuboc, which is the most important of all the streams, being navigable for steam launches drawing 4 feet of water for the distance of 12 miles from its mouth; the Matantany, which can be traversed 6 miles by raft; the Cababiyan, which is navigable 12 miles by steam launch; and the Calauag, which is navigable by the same sort of craft for 6 miles.

In Ambos Camarines, the chief river is the Bícol, which heads in Lake Bató. This river is navigable for steamers drawing 9 feet of water, if able to cross the bar, as far as Nueva Cáceres, a distance of 25 miles. Small native boats can go up the river to the lake, a distance of 60 miles from the mouth. The Basud river, in the same province, is navigable to a point 6 miles from its mouth for vessels drawing 6 feet of water. In Albay is the Polangui, a small tributary to Lake Bató, navigable by small steamers to Polangui, a distance of 7 miles, and by rafts for twice that distance. In Sorsogón province are several small streams, which are of some little importance for navigation. The Donsol river heads in the mountains of Albay and can be traversed by cascos as far as Jovellar, a distance of 10 miles, while rafts can be taken double that distance. The Putiao is navigable to the town of Putiao, a distance of 10 miles for boats drawing 5 feet of water, and the Irocín river will float cascos as far as the town of Irocín, 13 miles from its mouth.

Catanduanes Island, a part of the province of Albay, lies in the Pacific, separated from the mainland of Ambos Camarines province by Maqueda channel. It has an area of 682 square miles and its features consist of a range of hills traversing it centrally from north to south with spurs reaching to the coast upon both sides.

Polillo Island, a part of Tayabas province, rises in the Pacific ocean east of the central part of Luzón. Its area is 333 square miles, and its surface is hilly, nowhere rising to any considerable height.

The island of Marinduque, with an area of 352 square miles, is also a part of Tayabas province. It is nearly circular in shape, covered with hills which rise near the center to an altitude of probably 2,500 feet.

The island of Mindoro lies in the latitude of southern Luzón, and is rudely triangular in form, with a maximum length of 100 miles and in breadth is not far from 60 miles in its widest part. Its area is 3,851

square miles. Although it is represented upon most maps as traversed by two mountain ranges, one near each coast, it is reported by those who have crossed the island that there is but one range which traverses it, from the northwest point to the most southern point, running nearly midway of the island. The greatest elevation in this range is Mt. Halcón, said to be 8,800 feet in altitude. The range is broad, sending heavy spurs out to the coast from either end, leaving but a narrow coast strip. As a whole the island is heavily forested with many valuable species of timber. With the exception of wild people, settlement is confined to the coast, and even the coast is sparsely inhabited.

Masbate Island, with Burias and Ticao, and a few smaller neighboring islands, forms the province of Masbate. The area of the island is 1,236 square miles. Its principal feature is a mountain range which runs from the northwest point southeastward to the southeastern point of the island, with a spur running off to the southwest down the hook of the island. This range apparently has a maximum height between 2,000 and 2,500 feet. Burias and Ticao are long, narrow islands, neither of them rising to an altitude exceeding 1,000 feet. The former has an area of 197, the latter 121 square miles.

Sámar is the largest of the Visayan Islands and, next to Mindanao and Luzón, the largest of the Philippines, having an area of 5,031 square miles. Its length from northwest to southeast is 156 miles, and its greatest breadth is about 75 miles. It is separated from Luzón on the north by the Strait of San Bernardino. The surface is very irregular and hilly, but nowhere rises to great elevations. Although little is known regarding altitudes in the interior, it is probable that none of the summits reach 3,000 feet. There may be traced a line of elevations running the length of the island, from the northwestern to the southeastern points, separating the drainage to the Pacific from that flowing westward, with lateral spurs extending southwestward and northeastward.

The coast of Sámar is exceedingly irregular and broken, with many islands and reefs fringing it and with numerous indentations. The east coast, like that of Luzón and Mindanao, is a stormy one during the prevalence of the eastern trades, and is dangerous of approach at that season. Although many of the rivers are long, particularly those flowing eastward to the Pacific, none are of importance to navigation, few of them even being navigable for the light draft bancas.

Leyte, one of the larger islands of the Visayas, lies west of Sámar, separated from it by the narrow, tortuous Strait of San Juanico. Its area is 2,722 square miles. It is very irregular in shape, being elongated from north to south, broad at the two ends, and narrow in the middle. It has a length of about 120 miles, and its greatest width, which is in the northern part, is 52 miles.

The surface is greatly broken by isolated volcanic cones and ranges of mountains and hills. Of the former, two in the northern part of the island are known to exceed 4,000 feet in altitude, and in the southern part there are two, Sacripante and Cabalían, which nearly reach that altitude, while there are many summits which exceed 3,000 feet. The island is traversed by a mountain range from the northwesternmost part to the southern and southeastern points, with a spur running north, separating the drainage to Carigara bay from that flowing into the Strait of San Juanico. This range is comparatively low in the middle narrow portion of the island, becoming more elevated both toward the north and south, where the island is broader.

The coasts are exceedingly broken, abounding in deep bays and harbors and are fringed by islands. On the east, Leyte is separated from Sámar by San Pedro and San Pablo bay, the narrow San Juanico strait, and by Daram channel. San Juanico strait is unsafe for large vessels owing to the narrowness of the channel and the numerous sharp turns.

The island of Leyte contains few rivers of any importance for navigation. Indeed, the only one which affords more than a harbor at its mouth is the Binahaan, upon which cascos can be taken 15 miles to the town of Dagami.

Biliran Island, with an area of 190 square miles, lies off the north coast of Leyte, from which it is separated by Biliran strait. Its surface is hilly and broken, rising to altitudes exceeding 2,000 feet.

Bohol is one of the Visayan Islands and lies between Leyte and Cebú. It has an area of 1,441 square miles, a length from east to west of 58 miles, and a breadth from north to south of about 40 miles. The surface presents no great relief. Hills rise from the south shore toward the interior, reaching possibly 2,000 feet at the summits. The northern part of the island is reported as level or undulating, with an altitude in few places exceeding 1,000 feet.

Bohol has a simple coast, but its northern and eastern shores are fringed with numerous islands and reefs making approach dangerous. The capital and principal city, Tagbilaran, is situated on the narrow strait, which is dry at low water, separating it from the island of Panglao. The island contains few rivers of importance for steam navigation, but several of these streams can be traversed by boats of slight draft for some distance. The streams with navigable lengths for this sort of craft are as follows:

Loboc, which will float boats of 8-foot draft for 3 miles and rafts for 4 miles.

Abatán, which is navigable for boats drawing 4 feet for 12 miles and rafts for 15½ miles.

Inabañga, which is navigable for boats of 6-foot draft for 3 miles and for rafts for 25 miles.

Ípil, which is navigable for bancas drawing 5 feet for 8½ miles.

Cogtong, which is navigable for the same size of boat for 3½ miles.

Cebú, one of the Visayan Islands, has an area of 1,762 square miles. It is long and narrow, with a length, in a direction about north-northeast and south-southwest, of 139 miles. Its greatest breadth is 24 miles, with an average breadth of not more than 15 miles. It is traversed throughout in the direction of its length by a mountain range, the Cordillera Central, whose crest line runs nearly midway between the two coasts. Its highest summits, which are nearly midway the length of the island, slightly exceed 2,000 feet, while in other parts of the island the range has altitudes between 1,500 and 2,000 feet. Although not high, it presents a serious obstacle to crossing the island, only six easy routes across it being known.

Associated with this island are a few small islands adjacent to its coasts, the whole forming the province of Cebú, the most populous of all the provinces of the Philippine Islands. This long, narrow island has a simple coast with few indentations. The harbor of Cebú, its principal city, and after Manila and Iloílo the largest municipality in the islands, is formed by the straits separating the main island from Mactán Island.

Cebú contains no navigable rivers, if the Cabiañgón, up which bancas can go for 3 miles, is excepted.

Negros is one of the Visayan Islands, and has a long and rather narrow shape, being broadest near the two ends. Its greatest length in a direction nearly north and south is 130 miles, and its greatest breadth is 50 miles. The average breadth is not far from 30 miles. Its area is 4,881 square miles.

A mountain range traverses it from the northeastern corner southwestward to the southeastern extremity. This range, which is continuous, forming the water divide throughout, has a number of peaks exceeding 6,000 feet, among which may be mentioned Tepasi, 6,244 feet; Cuernos de Negros, 6,200 feet; and the volcano Canlaón, 8,192 feet. This range contains several other volcanoes, most of which are dormant. Around most of the island there is a broad strip of low coast land, much of which has been utilized for the raising of sugar cane, which is carried on mostly in large haciendas.

This island contains two provinces, Negros Occidental and Negros Oriental. To the latter belongs the small island of Siquijor, which lies east of the southern point of the island. This has an area of 106 square miles and rises at its central summit, Malabahoc, to an altitude of 1,138 feet.

1. FORT PILAR, ZAMBOANGA, MINDANAO—TYPICAL EARLY SPANISH FORT. 2. SPANISH RESIDENCE WHERE AGUINALDO WAS CONFINED, MANILA. 3. PRIMITIVE OVENS. 4. VIEW OF INNER HARBOR, ILOÍLO, PANAY. 5. LOADING AND DISCHARGING OF VESSELS, CEBÚ, CEBÚ.

There are few rivers of importance to navigation. Indeed, the only river, except the Pásig, which will admit steam vessels of any considerable draft is the Danao, up which vessels drawing 10 feet of water can be taken to a distance of 10 miles from its mouth. The other rivers on the island are navigable only for rafts, or *lorchas*, and to distances as stated below:

	Miles.
Calatrava	5
Salamanca	4
Vito	3
Balanon	2
Tanao	5
Himagaaon	4
Sicaba	5
Balusan	2

Panay, the westernmost of the Visayan Islands, has roughly the shape of an isosceles triangle, with sides, respectively, 100, 100, and 75 miles, and an area of 4,611 square miles. A range of mountains traverses the island from the northwest to the southwest corner, its crest being only a few miles inland from the west coast. This contains a number of peaks of considerable altitude, among them Usigan, 4,300 feet; Agótay, 3,764 feet; Madiaás, 7,264 feet; Nangtud, 6,834 feet; Maymagui, 5,667 feet; Llorente, 4,466 feet; Tiguran, 4,900 feet; and Igbanig, 4,343 feet. This range forms the eastern boundary of the province of Antique, one of the three provinces into which the island is divided. From Maymagui peak a spur leaves this range and crosses the island in an easterly and then northeasterly direction to the northeast corner. This is not as high as the former range, its peaks ranging in altitude between 2,000 and 3,000 feet. It separates the provinces of Cápiz and Iloílo.

The coast lands in the province of Antique are nowhere broad, since spurs from the mountain range come nearly to the coast, but in the other two provinces there are large areas of level or rolling lands in the valleys of several streams.

To Iloílo belongs the island of Guimarás, with an area of 228 square miles.

The north coast of Panay is much broken with many indentations and numerous islands and reefs. The northern part of the eastern coast is much the same, while the southeastern and western coasts are simple.

The island of Panay contains many rivers with a number of fertile valleys, but their navigability is by no means in proportion to their extent. Indeed, there are no rivers on the island which are navigable for craft drawing much water. The Jaro river, 40 miles long, is navigable for bamboo rafts nearly to its head, as is the case with the Jalaur, which is 65 miles in length. The other rivers of the island

have a much less navigable length, and will admit only small native craft. These are as follows:

	Miles.
Iloílo	8
Dumagás	3
Magtalisay	3
Tinorin	3
Anilao	4
Banato	12
Ájuy	3
Pinatan	10
Balasian	6

Paragua is a long, narrow island stretching 275 miles in a direction nearly northeast and southwest, with a maximum breadth of only 25 miles, and an average breadth not exceeding 15 miles. Its area is 4,027 square miles. It is traversed throughout its length by a range of mountains whose summits, as a rule, run about four and five thousand feet, while a few, such as Cleopatra's Needle, 5,200 feet; Cautarag, 5,868 feet; Landargan, 5,397 feet; Victoria, 5,680 feet, exceed 5,000 feet, and one summit, Mantaliñgajan, is reported to have an altitude of 6,843 feet. In latitude 10° north the range breaks down to a low divide only a few hundred feet high, and the island narrows to a breadth of 5 miles.

Tablas Island, which with Romblón, Sibuyán, and a few smaller islands, forms the province of Romblón, has an area of 324 square miles. As the name suggests, the island is plateau-like, having for the most part a level surface considerably elevated above the sea. Its highest point is Cabeza de Tablas, 2,405 feet.

The great island of Mindanao, the second largest of the Philippines, has an extremely irregular shape and varied relief. Its area, as measured upon different maps, differs widely, ranging from 33,767 to 46,721 square miles. The measurement based on the latest and presumably the most accurate map, gives 36,292 square miles, or 4,677 square miles less than Luzón. It stretches in latitude from 5° 40′ to 9° 50′ north, and in longitude from 128° 5′ to 132° 15′ east.

The irregularity of relief in Mindanao is largely due to extended and frequent volcanic action operating on an immense scale. The longest and probably the most continuous range is in the eastern part of the island, where it follows the east coast from Laguna de Maínit, supposed to be an ancient crater, southward to Cape San Agustín, a distance of over 200 miles. In all this distance the range is quite continuous, rising to summits exceeding 4,000 feet in altitude in the northern and central parts, and forming the divide between the waters flowing directly into the Pacific and those flowing into the great river of Surigao, the Agusan. West of this range lies the broad valley of the Agusan, one of the two great valleys of Mindanao, and on the

south the Gulf of Dávao. The Agusan river, second in magnitude in Mindanao and third of the Philippines, heads in the eastern coast range far south and east of Dávao gulf, and flows northward 240 miles to its mouth in Butúan bay. Near its source it flows very near the coast of Dávao gulf, with a low divide and indications of a former outlet to the gulf. Except near its source, it flows in a broad, level valley, 40 to 50 miles in width. In its lower course the river has little fall, and just north of latitude 8° it flows through a succession of marshy lakes, Linao or Dagun, Sadocún, and Pinayat, with many bayous and esteros. From the mountain ranges on either side the river receives many powerful branches. It is navigable for vessels drawing 6 feet of water for a distance of 20 miles above its mouth, and for smaller craft a much greater distance.

West of the Agusan valley is a succession of ranges, separating it from the valley of the Río Grande de Mindanao river, the second great valley of the island. These ranges trend nearly north and south, and are broken, many of them short, with frequent low gaps or passes. The higher ranges are in the northern part of this region, where they attain altitudes of from 4,000 to 5,000 feet. Near the head of the Gulf of Dávao these ranges disappear, leaving a broad, low gap connecting the coast with the valley of the Río Grande de Mindanao river. South of this rise three great volcanoes, Apo, the highest summit in these islands, 10,312 feet, Magoló, and Matútum. These three stand nearly in a north and south line, and are practically isolated from one another, so far as any connecting mountain ranges are concerned. The last two are apparently extinct, but have been little worn by streams and are still fine truncated cones. The first is nearly extinct. It is the center of an immense mountain mass, spreading with its great spurs in all directions, and has been subjected to active erosion for a long time. East of Magoló and Matútum the peninsula separating Sarangani bay from the Gulf of Dávao is traversed from north to south by a mountain range with a summit altitude of probably 4,000 feet.

West and south of the lower part of the valley of the Río Grande de Mindanao river stands a broad range trending northwest and southeast, or rather parallel to the coast, separating the Río Grande de Mindanao river from the Célebes sea. This range has a summit altitude of over 4,000 feet, and is continuous, with scarcely a break, from near the mouth of the Río Grande de Mindanao river almost to Sarangani bay. Between the southeast end of this range and Matútum is a broad depression, but little above sea level, by which passage is easy from Sarangani bay to the lakes in the valley of the Río Grande de Mindanao river. This route is utilized by the telephone line from Cottabato to Makar. East of Matútum is another depression trending north, and connecting the head of Sarangani bay with the upper part of Dávao gulf. This is used by the telephone line from Makarto Dávao.

The Río Grande de Mindanao, or Pulangui, as it is called in its upper reaches, is the largest stream in Mindanao and the second in the archipelago, being exceeded in length and volume only by the Cagayán in northern Luzón. It heads in Mts. Sobrac and Quimánquil, near the north coast, west of Macajalar bay, and after a long, sinuous course among the short detached ranges of mountains west of the Agusan valley, it enters the great level Río Grande de Mindanao valley. Through this it flows southward to Lake Liguasan, from which it emerges in a new course which it pursues to its mouth, after a course of nearly 300 miles. It is navigable for small steamers to the lake, and for boats drawing 3½ feet, for 15 miles farther. Lake Liguasan and Lake Bulúan, a few miles to the south, are large marshy lakes, surrounded and connected by a network of bayous. The divide between the drainage basin of Lake Bulúan and Sarangani bay is low, and it is said, shows the former presence of a water course across it, indicating that in former times the Río Grande de Mindanao may have had its outlet to that bay. That there has occurred an elevation in recent times is shown by a terrace 500 or 600 feet high on the west shore of Sarangani bay, and it probably involved the whole of southeast Mindanao. Such an elevation would account for the changes suggested in the courses of both the Río Grande de Mindanao and Agusan rivers, and such changes would explain the lakes in the course of these streams.

On high land in the interior, between the bays of Illana and Iligan, is Lake Lanao, whose surface is 2,200 feet above the sea. It is drained northward to Iligan bay by the Agus river. On the south shore of the lake the land rises abruptly to a plateau nearly 1,000 feet above the lake, on which stand several detached hills, probably extinct volcanoes, 1,000 or 2,000 feet higher. The lake is nearly surrounded by mountains. On the north is a range trending parallel to the coast of Iligan bay, while on the south a range runs parallel to the coast of Illana bay, the two ranges joining in longitude 130° east, forming a single range trending west and then southwest, and forming the backbone of the Zamboanga peninsula. In few places does this range exceed 5,000 feet in altitude, the summits commonly ranging between 4,000 and 5,000 feet, becoming less elevated toward the end of the peninsula. A heavy spur runs southward down the peninsula west of Illana bay to Point Flechas. On the north, in the eastern part of Dapitan, is a mountainous mass, the central point of which is the volcano Malindang, from which great spurs run off in various directions.

Although Mindanao has an extremely irregular shape, with many great bays extending far inland and many long promontories, still in detail the coasts are simple, and good harbors are not abundant.

Camiguín Island, belonging to the province of Misamis, lies off its

1. GENERAL VIEW OF CAMP VICARS, ELEVATION, 3,000 FEET, SHOWING CHARACTER OF COUNTRY ABOUT LAKE LANAO, MINDANAO. 2, 3. GENERAL VIEW OF CEBÚ, CEBÚ.

north coast. Its area is 94 square miles. The entire island is volcanic, its summit exceeding a vertical mile in height.

Dinágat is a long, narrow island belonging to the province of Surigao and lying across the entrance to the strait between Mindanao and Leyte. Its area is 309 square miles. The island is traversed by a range of mountains trending nearly north and south and rising in one summit, at least, to an altitude exceeding 3,000 feet.

The island of Basilan, with an area of 478 square miles, lies directly south of Zamboanga, from which it is separated by Basilan strait. The island is mountainous, rising in its highest summit to an altitude of 3,348 feet. Isabela, its principal town, is occupied as a naval station and marine hospital.

Joló is the most important island of the Sulu archipelago, lying southwest of Zamboanga in latitude 6° north, and has an area of 326 square miles. Its surface is covered with hills, which, in a few summits, such as Bahú, 2,810 feet, Butpula, 2,739 feet, and Tumatanguis, 2,940 feet, rise to the dignity of mountains.

Tawi Tawi, the largest of the Tawi Tawi group, which is the most southern of the archipelago, has an area of 232 square miles. Its surface is for the most part low and level, but rises irregularly into summits, respectively, 1,151, 1,284, and 1,864 feet.

FAUNA AND FLORA.

FAUNA.

In the animal life of the Philippines are traced resemblances to neighboring regions and differences from them. The fauna most closely resembles that of the neighboring Malayan Islands, but at the same time shows certain remarkable differences from them. Thus, there are very few mammalia in comparison with the number in Borneo and Java. There are but two species of monkeys, but three representatives of the carnivora, and of the deer tribe but six species. Small rodents are very scarce, except in the large seaports, while on the other hand there are at least 30 species of bats. There are no large mammalia except the carabao, a few of which are still found wild, and the timarau, or antelope buffalo, of Mindoro. Altogether there are but 23 species of terrestrial mammals known on the islands.

Not only does the fauna of the Philippine Islands differ in certain marked respects from that of the adjacent islands of the East India archipelago, but the different islands of the Philippines differ among themselves in their fauna. The timarau is found only in Mindoro, porcupines are found only in Paragua and in the Calamianes Islands, and there are numerous other species of animals which have been found only in certain parts of the archipelago.

Such peculiarities of distribution of land animals may be explained easily, but it is not so easy to explain similar facts concerning the distribution of birds. Paragua and the Calamianes Islands possess several species which are not found elsewhere in the archipelago, but which are similar to species found in Borneo. Of the 286 species of birds found in Luzón, 51 at least are not known to occur outside of that island. The avi-fauna of Sámar and Leyte contains 22 species not found elsewhere, and similarly in Mindanao and Basilan are found 17 species peculiar to those islands. One of the most striking cases, however, is that of Cebú, which, although a near neighbor to Negros on one side and Bohol on the other, contains 9 species of birds not found elsewhere. The total number of species of land birds known is a little over 300, a larger number than in Java; of these many are game birds, such as snipe, plover, quail, duck, and geese. In spite of this richness of species there are many important genera found in the other Malay Islands which are not represented here, while on the other hand more than two-thirds of the Philippine species are peculiar to that group of islands. These facts strongly emphasize the isolation of the archipelago.

There is an abundance of crocodiles, lizards, and snakes. Among lizards is the common little house or chirping lizard, so often seen and heard on the walls of the rooms as to be regarded as a sort of "cricket on the hearth." Among snakes are pythons, said to have been found 40 feet in length.

Insect species are numerous, and many of them are beautiful. As with other branches of the animal kingdom, they show differences from those of the other Malay Islands and some affinities with those of more eastern islands, a fact probably attributable to the easterly trade winds. While the number of species of insects is large, one is struck by the small amount of insect life. Common house flies are few, and mosquitoes are nowhere sufficiently abundant to constitute a pest, except about the esteros and stagnant pools near the coast.

The land mollusca are abundant and of great interest, as they seem to combine the characters of the Malayan Islands and the Polynesian groups.

Altogether the fauna of the archipelago is of exceeding interest to the naturalist, as illustrating the effect of long continued isolation upon animal species, and consequent differentiation from the related species in the neighborhood. There is here a field for a very valuable study of animal and plant adaptation.

The waters teem with fish of a great variety of species, which form a very important element in the food supply of the people.

FLORA.

It is necessary in this connection only to characterize in general terms the plant life of the archipelago, inasmuch as in the text descriptive of agriculture and the arts, many, indeed nearly all, of the useful plants and trees of the islands, whether indigenous or introduced, are described or mentioned, so that it is unnecessary to go into details regarding them.

The general features of the flora are Malayan, that is, they resemble the floras of Java, Sumatra, Borneo, and Célebes, more nearly than those of any other parts of the earth, and yet it differs from them in many important respects. Certain features of the Australian flora, also, are found here, and in the north of Luzón are found forms closely related to plants of China, among them the pines found on the higher mountains. While these general relationships with neighboring regions are plainly marked, there are many specific differences, which give the flora of these islands a marked individuality. These differences in few cases are sufficiently great to make generic distinctions, and in 769 cases they are sufficient to make distinct species. These seem to indicate a prolonged period of isolation of these islands from their neighbors, during which this large number of specific differences has developed.

FORESTS.

The forests of the archipelago are of wide extent and embrace a great variety of woods, many of them highly valuable. Woods suitable for the finest cabinetwork, for veneering, and for artistic purposes, and also woods adapted to ship or house building and other economic uses are found in great abundance. There are also many gutta-percha, india rubber, and other gum-producing trees, dye and medicinal woods and plants, and other forest growths, most of which are mentioned in connection with the subject of agriculture. The enormous extent and wide range of usefulness of Philippine forest products will render them, under the careful management and conservation provided for by law, second only to agricultural products as a source of insular wealth and prosperity.

The number of different kinds of trees is not known, but the report of the Chief of the Philippine Forestry Bureau for 1902 shows that 747 species of wood were brought to market during the year ending June 30, 1902. The number of useful woods is undoubtedly larger than the number marketed, and in addition the forests contain many trees the woods of which are not used for domestic or economic purposes.

The number of species of timber marketed in 1902 was as follows[1]:

	Number of species.		Number of species.
Superior group	12	Fourth group	85
First group	18	Fifth group	12
Second group	48		
Third group	571	Total	746

In explanation of the above statement it should be said that the woods of the islands are graded or classified, under existing laws and regulations, into the six groups indicated, according to their value and usefulness. All timber cut must be under licenses issued by the Forestry Bureau, and licensees pay for the amounts they cut according to the rates per cubic foot established by law.

Prior to American occupation of the islands, no examination of the forests had been made. Such exploration is now in progress by experts under the Forestry Bureau, who are making detailed investigations of the species and amounts of standing timber. From these investigations and a large amount of reconnaissance, a map was prepared in the Forestry Bureau, for exhibition at the St. Louis Exposition.

Among other matters of interest connected with their provinces, the supervisors of the census were requested to furnish information concerning the amount of timbered land within their jurisdiction and its location. In nearly all cases this request has been complied with, and this information and some from other sources have been combined with the map of the Forestry Bureau, in the preparation of the forest map herewith presented.

The climatic conditions are such that if it were not for the agency of man the islands would be almost entirely covered with forests. The regions not forested at present are, in the main, the populated regions, or those which have been populated; the population being in great measure distributed along the seaboard, in the great valley of Luzón, in the valley of the Cagayán river, in the valley of the Río Grande de Mindanao river in Mindanao, and those of smaller streams, it follows that those are the principal areas now devoid of forests. Indeed, a forest map and one showing the sparsely settled parts of the islands are nearly identical.

On the level lands and on the mountain slopes up to an altitude of 3,500 to 4,000 feet, broad-leaved trees comprise the principal, almost the only, components of the forests. Above that altitude pines are found, and often in pure growth.

[1] For a list of the woods here referred to see Report of the Philippine Commission, 1902, pages 518–521.

Summarizing the information at hand, it appears that approximately 70 per cent of the area of the archipelago, or about 80,000 square miles, is forested. The forested area was estimated by Fernando Castro in 1890 at about 48,112,920 acres, or 75,150 square miles. This estimate includes all the woodland, public and private, and amounts to 66 per cent of the total area. An official estimate made in 1876 gave an area of about 80,000 square miles.

Little is known concerning the stand of timber per acre. The Forestry Bureau has made careful examinations at several places in the islands and has measured sample acres containing more than 10,000 cubic feet, or 100,000 board feet, per acre, and it reports large areas of virgin forest, of which the average stand is 7,000 cubic feet per acre. It is probable, however, that this is much above the average of the wooded area of the islands, still enough is known to hazard the conjecture that the average stand of timber in the islands may exceed 2,000 cubic feet per acre.

If this estimate of average stand is not excessive, the amount of timber in the archipelago is in the neighborhood of 1,000,000 million feet B. M., or more than double the amount in the states of Oregon and Washington together.

The stumpage value of the above timber to the Government, at an average of three cents gold per cubic foot, is not far from three billion dollars, and it is easy to foresee that when the lumber industry reaches any considerable magnitude, the receipts from it will form no inconsiderable part of the income of the Government.

The islands are well supplied with streams having sufficient volume of water for floating logs. Most of these can be made good driving streams by a little work in the way of removing snags and sand bars. It must be remembered, however, that most of the timber in the Philippines is too heavy to float and that the logs must be buoyed by bamboo poles. It may be discovered when logging operations on a large scale are instituted that logging railways will be more economical than driving the logs in the streams.

Logging is carried on at present on a small scale and with very primitive appliances. The logs are dragged out of the woods by carabaos to the railroad or to the streams, down which they are floated by the aid of bamboo.

The following are the figures for timber production in the islands

for the year ending June 30, 1902, as reported by the Forestry Bureau in its annual report:

Timber production in the Philippines for the year ending June 30, 1902.

	Cubic feet.
Superior group	673,767
First group	147,567
Second group	665,900
Third group	1,898,305
Fourth group	305,013
Fifth group	176,028
Total	3,866,580
Gratuitous (granted)	894,405
Private lands	196,987
Grand total	4,957,972

This amount is about the equivalent of 50,000,000 feet B. M., a smaller amount than is cut annually by a single mill in the United States.

Quantities of forest products taken from the public lands of the Philippines during the fiscal year ending June 30, 1902.

PRODUCT.	Unit of quantity.	Quantity.
Timber	Cubic feet	3,637,392
Firewood	do	3,808,870
Charcoal	do	247,947
Rattan	Pounds	20,685
Dyewoods	do	2,256,458
Tan bark	do	312,154
Gum mastic	do	1,082,235
Rubber	do	282,996
Gutta-percha	do	373,331
Vegetable oils	Gallons	9,181
Pitch	Pounds	113,905
Cinnamon	do	20,685

Quantity of timber taken from public lands of the Philippines during the fiscal year ending June 30, 1902, by provinces.

PROVINCE.	Cubic feet.	PROVINCE.	Cubic feet.
Abra	3,113	Marinduque	5,247
Albay	48,855	Masbate	151,773
Antique	16,736	Misamis	32,898
Bataán	382,178	Negros Occidental	207,996
Batangas	3,933	Negros Oriental	30,769
Bohol	4,021	Nueva Écija	95,422
Bulacán	260,907	Pampanga	229,986
Cagayán	208,153	Pangasinán	116,916
Camarines (Ambos)	146,880	Paragua	10,511
Cápiz	65,393	Rizal	35,584
Cavite	3,591	Romblón	41,993
Cebú	35,144	Sorsogón	65,424
Cottabato	26,065	Surigao	23,855
Dávao	20,729	Tárlac	260,035
Ilocos Norte	72,923	Tayabas	435,379
Ilocos Sur	53,994	Unión	67,675
Ilollo	105,717	Zambales	286,252
Isabela	12,123	Zamboanga	82,873
Joló	1,671		
Laguna	18,585	Total	3,866,580
Leyte	195,179		

Species of timber arranged in order of quantities cut during the fiscal year ending June 30, 1902, from public lands only.

SPECIES.	Cubic feet.	SPECIES.	Cubic feet.
Lanan	656,054	Anam	29,587
Apitong	309,823	Batitinan	27,649
Molave	228,863	Palo-martia	26,698
Guijo	209,298	Cupang	25,379
Narra	124,513	Pagatpat	24,098
Yacal	105,937	Malacmalac	24,083
Dungon	76,154	Malapapaya	23,545
Bonga	76,038	Aranga	23,032
Bacao	62,183	Amuguis	22,832
Sacat	61,451	Bulao	22,082
Ipil	55,279	Apuit	21,919
Balacat	45,919	Mayapis	21,216
Malasantol	45,214	Banaba	19,634
Catmon	42,688	Calumpit	18,992
Calantas	41,614	Mangasinoro	18,071
Malaanonang	41,197	Bansalaguin	18,052
Palosapis	37,879	Batete	17,830
Malabonga	37,720	Panao	16,497
Tindalo	37,200	Pagsainguin	16,026
Mangachapuy	36,568	Dungon-late	15,532
Betis	36,441	Banuyo	15,046
Nato	36,417	Bayoc	14,469
Balinhasay	36,213	Anahao	13,122
Acle	35,632	Manicnic	12,301
Macaasin	33,874	Others	806,817
Malabalac	31,742		
Dalinsi	30,660	Total	3,866,580

MINERAL RESOURCES.

Unless all indications are deceptive, the mineral wealth of the Philippine Islands is very great. Coal, of Tertiary age, of widely differing qualities, from lignite so soft and impure as to be practically worthless up to that equal in steam capacity to the best Japanese coal, is found scattered widely over the archipelago. Indeed, there are few provinces in which it has not been found. Many of the prospects which, on the surface appear almost worthless, owing to weathering, may, with depth, develop into a better quality. Gold, also, is very widely distributed, but thus far the veins and placers are poor and can not be worked at a profit under present conditions of transportation and labor. Valuable deposits of copper and iron have been discovered, and in years past have been worked to a limited extent. Indications of asphaltum and petroleum have also been discovered, yet the mineral production of the islands was, in 1902, practically nothing.

The following list of mineral occurrences has been made up in part from the admirable report of Dr. G. F. Becker, of the United States Geological Survey, in part from the publications of the Mining Bureau of the insular government, and in part from the reports of the supervisors of the census.

Coal.—Coal has been found in the following localities:

Cagayán province, in the municipalities of Nassiping and Pamplona.

Abra province, in Dolores.

La Unión province, in four or five localities.

Nueva Vizcaya province, near the municipality of Bayombong.

Bulacán, at Norzagaray.

Rizal province, in Tanay.

Tayabas province, on the islands of Polillo, Alabat, Pagbilao Grande, and Pagbilao Chico; also in the municipality of Macalelón.

Ambos Camarines province, in Mambulao, Paracale, Pasacao, Caramoan, and Bató.

Albay province, on the islands of Batán, Cacraray, and Rapurapu, which appear to be everywhere underlaid by coal, and in Bató on Catanduanes Island.

Sorsogón province, in the municipality of Gúbat, Bacón, and Magallanes.

Mindoro province, in Bulalácao, and on the island of Semirara.

Marinduque Island.

Masbate, in Cataíñgan and Palanas.

Sámar, in Calbiga, Pambujan, Paranas, Gándara, Zumárraga, and Catarmán.

Leyte, in Babatuñgon, and on Biliran Island.

Bohol, in Calape.

Cebú, at Danao, Compostela, Naga, Bolhoón, Balambán, Asturias, Toledo, and Alegría; indeed, in nearly every municipality on the eastern coast.

Negros Occidental, in Cavancalan, Escalante, and Calatrava.

Negros Oriental.

Iloílo, in Dingle and Nueva Valencia.

Cápiz, in Madalag.

Surigao, on the islands of Dinágat and Siargao, and in the municipalities of Loreto, Bislig, Tándag, Tagó, and on Point Sancop.

Misamis, in the barrio of Naauan.

Zamboanga, at the head of Sibuguey bay.

Dávao, near Matti.

Of the above, coal is now being mined on Batán Island by the United States, which has leased a tract of coal land, for the supply of the army transports. Analyses show that it equals the best Japanese coal. Some is also mined by private parties. A report upon these Batán deposits has been published by the Mining Bureau. Samples of the Cebú coal have been analyzed, showing that some of them are but little, if any, inferior to the coals of Japan. The coal deposits of Cebú are extensive, but are badly broken by volcanic action. Much work was done in Spanish times in exploiting these deposits, but without a high degree of success. The coal found on Sibuguey bay has been tested on naval vessels, with, it is said, very satisfactory results.

It is altogether probable that in the near future the Philippine Islands will produce not only enough coal for their own supply, but

may furnish coal for a large part of the commerce of the Pacific, a fact of prime importance in determining the course of that commerce. With cheap, good coal and dock facilities at Manila, the traffic of that port may be vastly increased.

Gold.—Gold is reported in the following localities:

Lepanto-Bontoc.

Benguet.

Nueva Écija, in Gapán, Peñaranda, Boñgabon, and Puncán.

Pangasinán, in Salasá and San Nicolás.

Rizal, in Montalbán and at the mouth of Puary river.

Ambos Camarines, in Mambúlao and Paracale.

Albay.

Mindoro, in mountains near the municipality of Calapán and in the barrio of Sablayán, in the pueblo of Mambúrao.

Romblón, in Magallanes.

Masbate, in San Agustín.

Sámar, in Palápag.

Leyte province, on Biliran and Panaón islands.

Cebú, in Toledo and Balambán, and in the barrio of Talambán, in the municipality of Mabolo.

Negros Occidental, in Calatrava.

Iloílo, in San Enrique.

Cápiz, in mountains of Malínao, Maayón, Cuartero, and Dumarao.

Paragua province, on Balábac Island.

Misamis, in rivers flowing into Macajalar bay.

Surigao, in Surigao, Anao-aon, Placer, Maínit, Taganaán, Liañgá, Linguig, Carrascal, and Nónoc, and generally in the eastern range of Mindanao.

Zamboanga, from placers 40 miles from the city of Zamboanga.

Gold has been mined for centuries by the Igorots in Lepanto-Bontoc and Benguet, both from veins and placers. The total output has been small, as both classes of deposit are of low grade, but the Igorot is contented with low wages, especially if he is working for himself. Since American occupation this mountain range has been prospected by Americans and several hundred claims have been located. Little work has been done on them, and it is not believed that any deposits likely to prove profitable under present conditions of labor and transportation, have been discovered.

The deposits of Cápiz are placers and are said to have been long worked by natives. It is reported that 600 taels' worth of gold was extracted from the deposits of Surigao by natives in 1902. These are the only estimates of product that have been obtained for that year.

Copper.—Copper is reported in the following localities:

Lepanto-Bontoc.

Benguet.
Nueva Écija, in Puncán and Pantabañgán.
Pangasinán, in Salasá.
Masbate, in Milagros.

The largest and most promising of the above deposits are those in Lepanto-Bontoc. They are situated on the upper waters of Abra river near Mt. Datá, and they consist of enormous ledges of low-grade ore, outcropping in the bluffs bordering the river. They have in years past been mined extensively by Spaniards and Igorots, and much copper has been extracted by crude methods of mining and smelting. At present many claims are held by Americans, but no work other than the assessment work necessary to hold them has been done.

Copper has been mined in Benguet in a small way for centuries by the Igorots. Many claims have been located by Americans in this province, but little work has been done on them.

Concerning the copper and gold deposits of Lepanto-Bontoc, the following statements of Governor Dinwiddie, census supervisor of that province, are of interest:

The future advancement and wealth of Lepanto-Bontoc, from an industrial and commercial standpoint, probably lies in the mining possibilities. The mineral lands so far prospected and developed lie in the southern half of Lepanto, in the section known as Mancayán and Suyo. Since the early forties the Spaniards were aware that valuable mineral was contained in the province, by the stream of gold and copper brought to the coast by the natives, who mined in a primitive way. Some twenty years later, certain Spaniards secured crown grants or concessions for mining, and, from that time to the beginning of the insurrection, such grants were secured by many different parties. A complete list of the Spanish mining concessions may be secured from the Mining Bureau in Manila. No systematic work was ever attempted in this mineral belt, with the exception of the development of the Mancayán Copper Concession, whose boundary lines inclosed an immense body of solid ore, with a bold and precipitous exposure of the mineral on the Abra river, some 1,000 feet in length by 150 feet in height, and which, as has been proven by tunneling, runs back under the hill for many hundreds of feet, the width not yet being known. A syndicate operating this mine erected an old-fashioned smelter half a mile from the mine, with trails leading upward to the plant from the mine. No attempt was made to smelt the low-grade ore, but instead all the many rich leads were followed where the ore showed from 40 to 60 per cent of copper. The result has been that the hill of copper ore has been burrowed into in every direction along these small veins. What the total value of the ore extracted was is not known, the statistics on the subject not being known. It is said that the syndicate stopped operating from lack of Igorot laborers and the fact that so much stealing was done and so many rake-offs taken that the mine did not pay the shareholders.

There are several other Spanish concessions, of both copper and gold, on which more or less desultory work has been done. The gold-bearing rock has received much more attention than the copper, but the method followed was extremely bad; the claims were farmed out to the Igorots, who were allowed half the gold for their labor. The result was, naturally, that the owners did not receive their share, that the operations were only carried on when the Igorot miner needed a few pesos to buy supplies, and he smelted all the silver he dared into the gold buttons. Again,

the Igorot method of mining is ruinous to the country and to the owner, in rock which must be smelted to extract gold, as he builds dams on the edges of the slides or hills, waits until the rainy season fills them, and then releases a deluge which tears down the rock and carries the detritus into the valley below. On this mass of broken-down material he works, picking out and chipping tiny pieces of rock which show the gold freely, and again picking, or, rather, burrowing for a few feet into the face of the fresh exposure of rock. The rock is smelted, by handfuls, in charcoal ovens of rock and clay, built on the ground. The class of rock which he must of necessity use in this primitive furnace will often assay a thousand dollars a ton. There is no doubt that with the same showing of gold-bearing rock in the United States there would be created a gold fever which would bring thousands of prospectors to the spot and millions of capital to back the introduction of modern mining machinery and methods.

The mining belt, as now known to the handful of American mining prospectors who have with real fortitude hung on to this region for the last three years, waiting for an American mining law to be passed, that they might legally stake claims, reaches from a point 2 miles north of Mancayán to about 2 miles south of Suyo, in all a distance of some 10 or 12 miles, and the belt has possibly an average width of a mile.

The American miner since the passage of the mining law last autumn, and the concomitant recording of his claim, is rapidly completing his first year's assessment work, and hardly a tunnel or shaft has so far been driven which does not show low-grade copper ore, 10 to 20 per cent, in ledges from a foot to 15 feet in thickness, or where large intrusive gold-bearing quartz streams have not been uncovered which assay from $4 to $20 per ton.

It is true there is not enough Igorot labor at hand to develop these mines. It is also true that, while the American miner is setting about his task in a manner a thousand times more intelligent than the Igorot has ever done, he is yet, perforce, doing the work in a very primitive way, without powder to shoot a foot of rock, with few tools, and depending on the uncertain and difficult attempt of directing the Igorot how to do the actual work. The trouble is that the American miner has, as yet, been unable to display his find to the capitalist or backer. He has spent three years grimly holding on to his claim, without a shadow of warrant in law, until the passage of the recent mining law, and naturally he has been loath to advertise the wealth of the region until such time as he was protected by recorded claims, the result being that the little money with which he came into the country has long since been exhausted, and the wherewithal is not yet in sight to decently develop his holdings. In any cold clime this prospector would have been frozen out long ago and left the country in despair, but here, in the midst of perpetual springtime—for the region is between five and six thousand feet elevation—he turns to the soil for support, building a small cabin of readily accessible materials, planting a garden around it, and raising chickens and hogs to supply himself with food. In many ways the country is ideal for mining development. The climate is almost perfect at these high altitudes, and the American can labor here as readily as in any part of the United States. There is ample timber for all mining construction. The Abra river—a large, fast-flowing stream—offers more power than will ever be required, and, while the main trails to the coast are admirable for packing, the Abra river gives a practically easy outlet, with gentle grade to the coast, for the construction of an electric or steam railroad.

Capitalists will come into this country bringing the necessary labor and modern mining machinery for the smelting of the great areas of low-grade copper ore, and have before them as great a surety of immense winnings as the developers of the Lake Superior region ever had in the United States. Many of the copper claims will assay sufficient gold to pay all the operating expenses of a mill.

From what has been said above it will be understood that Lepanto-Bontoc in 1902 did not show any mineral output which can be measured in figures. The Igorots are constantly selling gold, and the buyer can always secure a few ounces of buttons by sending out word that he is there to purchase. The price has increased greatly during the last three years, gold previously bringing only 10 or 12 pesos, or $5 to $6 gold per ounce and more than double that amount to-day. Even at the present price, however, there is a large profit to the careful buyer who does not let the Igorot palm off his buttons filled with melted Spanish silver coins.

One of the Igorot copper industries which is being slowly suppressed is the manufacture of the *siping*, an extremely rude counterfeit of the Spanish copper coin. They are much thinner than the genuine coins, but, owing to the almost lack of small change in this province and other parts of northern Luzón as well, they are valued at a cent and a quarter Mexican, or 4 sipings are equal to 5 *centavos*. How large the issue has been since four years ago, when the industry began, no one knows. At least the entire western half of northern Luzón has been supplied with them, and the demand has been greater than the supply. That the manufacturer has found it remunerative there can be little doubt, for his outfit consists of a small hammer, a few Spanish coppers with which to make clay models, and a handful of charcoal placed in a hole lined with clay, which constitutes his smelter.

It is said that in years gone by the country was filled with copper kettles of Igorot manufacture, and it was these finding their way to markets of the coast which first attracted the attention of the Spaniards to the mineral deposits of this region. A few of these primitive hand-beaten kettles may still be found among the Igorots, but the story goes that they are all being rapidly converted into the salable siping.

Among the richer Igorots one often finds gold figurines—casts of their *anitos* and of animal forms, preferably the carabao—and again they often have very heavy gold ear disks, though the common people are content with the same forms in copper.

Governor Pack, census supervisor of Benguet province, adds the following details regarding the mineral deposits of his province:

The province of Benguet has four distinct mountain ranges, running in a northerly and southerly direction. One of these, the central and principal one, is mineral-bearing in many places, showing rich outcroppings of copper ore, which carries with it gold. In other places there are outcroppings of gold, silver, and a little lead. What would be developed by going to any depth below the surface or by following these leads to the mother ledge, can not be said, for it has never been done. The Spaniards, though here for centuries, and possessed of knowledge that there was gold in these mountains, never spent a cent in the development of mines. The Igorots would bring in gold in dust, sometimes coarse, which the Spaniards would gladly purchase, their prices never exceeding 7 pesos per ounce. It is well known that at one place, Antomac, there were Igorot diggings. Fianza, the last Igorot occupant of these lands, told me that he averaged 100 ounces a year from this one mountain. Even now gold can be obtained in small amounts from the Igorots, but they are shrewd enough to demand the market price. There are now 300 mining claims on record in the province, located by American prospectors. Perhaps half a dozen tunnels have been worked on these mines but without further results than the assessment work required by law for the purpose of retaining possession.

Iron.—Deposits of ore of this metal have been found in many places, among them the following:

Bulacán province, in Angat.

Ambos Camarines, 6 miles south of Paracale.

Sámar, in Páric.

Negros Occidental, on Binalarcan river.
Cápiz, in Pontevedra.
Bohol, in Maribojoc.
Dávao district, near Matti.

Of the above, the deposit in Angat and neighboring parts of Bulacán province appears to be extensive and rich. The ore is hematite and magnetite, principally the latter, and runs from 50 per cent to 63 per cent of metallic iron. The deposits extend over a belt 40 miles in length, varying greatly in breadth, lying on the west slope of the range which forms the eastern portion of the province. The ore was mined to a small extent during Spanish domination, but without financial success. Little prospecting of the deposits in place has been made, the ore having been taken mainly from bowlders on the surface. It was smelted with charcoal in small crude blast furnaces.

This property has been examined and reported on by the Mining Bureau of the insular government, and it appears probable that it may be made of great value to the archipelago, not only rendering it independent of the rest of the world in the matter of pig iron, but it may build up extensive manufactories of iron and steel in these islands.

Petroleum.—Indications of the existence of petroleum have been found in a number of places, commonly associated with coal or lignite. The following have been reported:

Nueva Écija, in northern part of province.
Leyte, in San Isidro.
Cebú, in Toledo, Alegría, and Asturias.
Iloílo, in León, Maasin, and Janiuay.

This article has as yet no commercial value.

Mercury.—Deposits of ore of this metal have been reported in the province of Albay, and in Mt. Isarog, in Ambos Camarines.

Lead.—Ores of this metal are said to have been discovered on Point Caragrag in the province of Sorsogón, in Paranas on the island of Sámar, and in Cavancalan in the province of Negros Occidental.

Sulphur.—This mineral is found in many localities, as might be expected from the volcanic character of the archipelago. It is reported in the province of Sorsogón, in Murcia in the province of Negros Occidental, in Negros Oriental, in Burauen in the province of Leyte, and on Mt. Apo in the district of Dávao.

Marble.—Deposits of marble are in the province of Sorsogón; in Tuburan in the province of Cebú, and in the province of Romblón, where it is of excellent quality and is quarried in considerable quantities.

Gypsum.—This is known to exist in Peña Blanca, Solana, and Mauanan in the province of Cagayán, in the province of Nueva Écija, where it is quite generally distributed; in Los Baños in the province

of La Laguna, in the province of Sorsogón, in Balilijan and Dauis in the province of Bohol, and in Manapla and Bacólod in the province of Negros Occidental.

Salt.—This mineral is said to have been found in Janiuay, León, and Maasin in the province of Iloílo.

Platinum.—Platinum is reported in the municipality of Páñgil in La Laguna.

Borax.—Borax is reported as having been found in the province of Negros Oriental.

II. CLIMATE.

Influences Affecting Climatological Conditions—Temperature—Water Vapor—Movement of the Atmosphere.

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The climate of a country is the complex of the average atmospheric conditions which have an influence upon organic life; therefore, an adequate study of the different elements which go to make up these atmospheric conditions would give a true idea of the climate.[1]

The more important elements which form the climate may be reduced to three, viz, heat or temperature; water vapor in its different forms, such as humidity, evaporation, clouds, and precipitation; and finally, the movement or circulation of the atmosphere, which includes the direction and force of the wind, cyclonic and noncyclonic storms, together with local and general storms. Atmospheric pressure is not, properly speaking, a climatological element, but, as it serves as an indication of the general variations of the climatological elements, strictly so called, a few words will be said occasionally on it, in so far as it has any relation to the above-mentioned elements.

The Philippine archipelago is situated in the Torrid zone or within the Tropics. The climate is, therefore, generally speaking, tropical, although there are points in the islands where it can not strictly be so termed. The exceptions are due to the fact that there are so many causes which influence the climatological conditions of the archipelago, that the different islands, and even different parts of the same island, have meteorological values so unlike that they possess climates entirely distinct. Not only does the latitude affect the climate, as the name "climate" itself seems to indicate,[2] but also the altitude, the relative distribution of land and sea, the size and configuration of the island, the proximity of mountain ranges, the composition of the soil, the vegetation, the ocean currents—especially those in the straits

[1] That the study of the climatological conditions be adequate, it is not sufficient to know simply the mean annual values of the elements, but it is necessary, also, to know the mean values for months and days in the various regions, together with the extreme values, and the maximum and mean oscillation. Over and above these data it is necessary to be cognizant of the circumstances which influence these values.

[2] In its original and stricter etymological meaning the word climate (Greek κλίμα, slope or inclination) was applied to one of a series of regions or zones of the earth running parallel to the equator, from which the earth's surface was supposed to slope to the poles, hence the Latin rendering of κλίμα, *inclinatio caeli*.

and the channels—in fine, all those causes which can in any way modify the climatological elements already mentioned.

Before speaking of these elements we propose to say a few words concerning the effects of each of the above causes in the different regions of the archipelago.

Of all the causes mentioned above which have influence on the climatological elements perhaps the relative latitude has the least influence. For example, Zamboanga, in Mindanao, and Aparri, in Luzón, are separated from one another by more than eleven degrees of latitude, but although Zamboanga is much nearer to the equator than Aparri, it enjoys a climate quite as mild as that of Aparri, which is at the extreme north of Luzón. The same may be said of Joló, Dávao, Dapitan, and other towns of Mindanao in comparison with those of the north of Luzón.

Altitude has a great influence on temperature, humidity, and direction of the winds in the islands. This may be observed by comparing the climate of the relatively high Baguió with that of the plain of Pampanga. Many other examples of the influence which altitude has on the climate might be cited, such as the towns surrounding Lake Lanao, the altitude of which is 2,200 feet above the level of the sea, compared with the climate of the lowlands around Iligan bay; the climate of the highlands of Abra and Lepanto-Bontoc with that of the Cagayán valley; the climate of the rising land all along the ridge which runs from the river Pansípit to its western slope, with the plain of Balayán, although this rising ground is only 300 feet above the level of the sea.

The archipelago is situated between the Pacific ocean and the China sea, at a distance of some 500 miles from the Asiatic continent and about 1,000 miles from Australia. On one side of the archipelago is the lower limit of an immense area of high pressure which is caused by the cooling off of the air in the interior of the continent, and on the other is the western limit of the enormous area of high pressure situated in the Pacific. The first area of high pressure slowly changes its position during the course of the year from east to west and from west to east between the parallels 30° and 40° north. During the winter months the center of the Siberian high pressure area lends force to the polar wind currents, as well as to the northeast monsoon. The permanent center of the Pacific high pressure area, on the other hand, has some influence on the predominance of the east and the southeast winds, especially at the period when the monsoon dies away. It is also very probable that the distribution of land and sea in this part of the Far East is the principal cause of the nonexistence of the southwest monsoon in the archipelago, although it blows in the Indian ocean. We have had occasion to speak of this fact in other publica-

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tions, where we have proved the nonexistence of this monsoon in the Philippines.

The climatological conditions of the eastern coasts of the larger islands of the archipelago, such as Luzón, Mindanao, Panay, Mindoro, Sámar, and Leyte, are quite different from those of the interior and western coast of these islands. This is especially the case if the islands extend from east to west, as with Mindanao, Panay, and Mindoro. If, on the other hand, the islands are not very broad and are prolonged in the direction north-south, as are the islands Cebú and Paragua, then the difference is not so great, while if the islands are narrow, like Tablas, Dinágat, Ticao, and Burias, there is scarcely any difference between the climate of the interior and that of the eastern and western coasts, no matter what be the general direction of their prolongation. The climate of the smaller islands does not suffer any modification on account of the land, but is generally that of the region they occupy; thus, for example, Capul, Virí, Laguán, and Siargao have the general climatological conditions of the east of the archipelago, and the islands of Corregidor, Lubang, and Calamián, those of the western coast of the archipelago.

Mountain ranges influence the climate of a country by protecting the lower plains from the strong winds. Thus the Suñgay range protects the fertile lands of Cavite from the destructive effects of the south and southwest winds. Manila is shielded from the strong southeast winds by the Tayabas hills, and the mountains Maquíling and Banájao. Again it is owing to the Zambales hills that the climate of the eastern slope and the plains of Pangasinán, Tárlac, and Pampanga is so different from that of the province of Zambales.

The well-known province of Benguet owes its salubrious climate and its abundant rainfall in July and August in great part to the fact that there is no high land on the east and south. The prevailing winds during the months of March, April, May, and June, on the table-land of Baguió are from the west and the west-southwest. These winds bring with them the aqueous vapor with which they are saturated, and thus cause a moderate rainfall during May and June, which diminishes the temperature much more than could be expected from the height alone. Thus the same cause which helps to cool the low-lying plains in the western part of the archipelago during the months of June, July, and August, also contributes to the tempering of the heat in Baguió during the months of March, April, May, and June.[1]

The geological constitution of the soil is one of the circumstances which has the least influence on the climate, still it has some influence, for, as the radiation and even the calorific capacity is quite distinct in different soils, it follows that these two factors modify to some degree

[1] "Climate of Baguió, Benguet," pages 64–71.

the general conditions of the climate. Thus, all other conditions being the same, the temperature of sandy soil will be different from that of clayey soil, which in turn will be distinct from the temperature of rocky or of soft soil. For this reason there is a considerable contrast between the temperature of Cavite and that of Marilao in the Bulacán plain, and between that of Manila and of Biñan in the province of La Laguna, both of which places are situated at but a small height above the level of the sea.

In saying that the vegetation of a country has some influence on the climate, we mean it to be taken in the sense of amount of vegetation or the amount of land covered by vegetation. Vegetation in general has a very direct influence on the condensation of aqueous vapor as well as on the radiation of heat, and consequently can modify in a very notable degree the climatological conditions. The two principal elements which it modifies are the rainfall and the temperature; thus, for example, these two elements have somewhat different values in Atimonan, Dáet, and Albay, owing doubtless to the conditions of vegetation in these regions.

If we look at a map of the isotherms of the world it will be seen that in many places they are irregular, and depart greatly from the east and west course which we would naturally expect them to follow. The reason for this variation is to be found in the course of the great ocean currents which cause the interchange of ocean waters between the equator and the poles, and thus cool or warm the surrounding land. There are two general currents which affect the zone of the archipelago. The one which extends from latitude 5° N. to 10° N. has great influence on temperature of the archipelago of Joló and the whole of the south coast of Mindanao. The other current, which in some respects is like the Gulf Stream, but much greater, comes from the east in the Pacific and extends from close to latitude 10° N. as far as the northern extremity of the Tropics, that is, as far as 23° N. This immense current inclines to the north on reaching the archipelago and then curves to the south of Japan and flows on from there to the east. As this current brings cool water, it tempers the heat of the eastern coasts, especially during the hot months, when the influence of the north monsoon has become a minimum—that is to say during the months of March, April, and May, during which months it is very probable that this current also contributes to the prevalence of the winds from the second quadrant.

Besides the general ocean currents, of which we have spoken above, there are also smaller currents in the straits and channels between islands, which are in part caused by the general currents. These small currents have much influence on the climate, as is shown by the climate of Zamboanga and the island of Basilan, which is modified by the currents of the Basilan channel. Again, the climates of Aparri and the

Batanes are influenced by the currents in the Balingtán and the Bashi channels, and the peninsula of Sorsogón and the north coast of Sámar by the currents in the San Bernardino strait.

Accordingly, as these causes, either individually or in various combinations, affect the different regions of the archipelago, the climates of these regions have different characteristics. These it is the aim of this paper to group and classify.

TEMPERATURE.[1]

The temperature probably constitutes the principal element of a climate, which is considerably modified by the thermic oscillations, especially by the annual oscillation. This annual thermic change varies within the archipelago from 7° C. on the Batán and Babuyán islands to 2–3° C. in the southernmost parts of the Philippine group. It must be well understood that we speak of the variations of the mean monthly temperature, not of the extreme, which occur during the year. This oscillation does not, however, increase uniformly from the Joló group to the Batánes, but is distributed somewhat irregularly between these limits of the Philippine archipelago, as the following table shows:

TABLE 1.—*Annual thermic oscillation in the Philippine archipelago.*

PLACE.	Annual oscillation (° C.).	Latitude (north).	
		°	′
Santo Domingo, or Basco (Batán islands)	7.0	20	28
Aparri (Cagayán, Luzón)	6.5	18	22
San Isidro (Nueva Ecija, Luzón)	5.2	15	22
Tárlac (Tárlac, Luzón)	5.2	15	31
Surigao (Mindanao)	4.6	9	47
Arayat (Pampanga, Luzón)	4.6	15	8
Baguió (Benguet, Luzón)	4.5	16	35
Atimonan (Tayabas, Luzón)	4.3	14	2
Dagupan (Pangasinán, Luzón)	4.3	16	4
San Fernando (La Unión, Luzón)	4.2	16	37
Ilotlo (Panay)	3.8	10	42
Legaspi (Albay, Luzón)	3.5	13	9
Manila	3.5	14	35
Iba (Zambales, Luzón)	3.4	15	21
Cápiz (Panay)	2.9	11	36
Ormoc (Leyte)	2.8	11	0
Cebú (island of Cebú)	2.7	10	18
Dávao (Mindanao)	2.2	7	1
Tagbilaran (Bohol)	2.1	9	38

From this table we learn: (1) That, generally speaking, the thermic oscillation increases with latitude; (2) that in equal latitudes the oscillation is less on the coast than in the interior. The variation on the peninsula of Surigao is remarkable, and probably due to the influence of the currents of the Pacific and of the Strait of Surigao.

The difference between temperatures of the warmest and coolest

[1] To reduce degrees of centigrade to degrees of Fahrenheit, if above freezing point, multiply number of degrees by 9, divide product by 5, and add 32 to quotient. Thus $100° \times 9 \div 5 = 180°$, and $180° + 32 = 212°$.

months is an important climatic element, namely, the mean annual range of temperature.

In order to give an idea of the distribution of temperature in the archipelago we have arranged the stations of the Philippine weather service into as many groups as there are different isotherms which affect them. It is, however, not enough to consider merely the isotherms corresponding to the various stations to ascertain the mean annual range of temperature of each station. We must also take into account the mean daily variation of temperature found by comparing the means of the highest and lowest temperatures, which latter are called by some the "nonperiodic amplitude of temperature."[1]

In forming the following table only those stations have been taken into account whose elevation above sea level is less than 80 meters.

TABLE 2.—*Maximum diurnal range of temperature at specified stations, with location of isotherm, by months.*

JANUARY.			FEBRUARY.		
Station.	Isotherm (° C.).	Maximum diurnal range (° C.).	Station.	Isotherm (° C.).	Maximum diurnal range (° C.).
Catbalogan	27	17.1	Isabela de Basilan	27	15.3
Balingasag	27	16.0	Dávao	27	13.0
Isabela de Basilan	27	14.3	Zamboanga	27	12.3
Zamboanga	27	12.2	Loón	27	11.6
Tagbilaran	27	11.9	Dapitan	27	11.5
Joló	27	10.7	Cápiz	27	11.0
Romblón	27	8.4	Cuyo	27	8.9
Tuguegarao	26	22.6	Biñan	26	19.2
Dagupan	26	17.0	Aráyat	26	18.9
Biñan	26	16.0	Dagupan	26	18.4
Dapitan	26	14.1	Cottabato	26	17.6
Atimonan	26	12.5	Balañga	26	17.2
Dávao	26	12.0	Iba	26	16.9
Bacólod	26	11.7	Iloilo	26	12.0
Iloilo	26	11.1	Tagbilaran	26	11.8
Loón	26	11.0	Bacólod	26	11.6
Boroñgon	26	10.5	Caraga	26	11.0
Maasin	26	10.1	Cavite	26	10.7
Cebú	26	9.0	Maasin	26	10.7
Cavite	26	8.8	Joló	26	9.6
Surigao	26	7.5	Surigao	26	9.0
Cuyo	26	6.5	Cebú	26	8.8
Tárlac	25	19.1	Romblón	26	8.4
Aráyat	25	18.0	Tuguegarao	25	21.3
Balañga	25	17.4	Tárlac	25	19.5
Cottabato	25	15.9	Marilao	25	18.1
Marilao	25	15.7	San José de Buenavista	25	17.0
Pórac	25	15.3	Manila	25	16.0
Bolinao	25	14.1	Pórac	25	15.8
Manila	25	14.0	Tuburan	25	14.4
Legaspi	25	11.3	Bolinao	25	13.6
Baler	25	10.8	Atimonan	25	12.0
Dáet	25	10.0	Corregidor	25	12.0
Cápiz	25	9.1	Legaspi	25	9.0
Masinloc	24	14.3	Magálan	25	.....
Magálan	24	.....	Bayombong	25	.....
Bayombong	24	.....	Olongapó	24	17.9
San Fernando (La Unión)	23	16.5	Catbalogan	24	17.0
Aparri	23	14.4	Calbáyog	24	15.9
Candón	23	14.1	Aparri	24	14.9
Santo Domingo, or Basco	23	11.0	Masinloc	24	14.6
Vigan	23	.....	San Fernando (La Unión)	24	13.8
			Candón	24	13.2
			Boroñgon	24	12.0
			Dáet	24	9.4
			Santo Domingo, or Basco	22	12.0

[1] "Handbook of Climatology," by Dr. Julius Hann, New York, 1903, page 13.

TABLE 2.—*Maximum diurnal range of temperature at specified stations, with location of isotherm, by months*—Continued.

MARCH.			APRIL.		
Station.	Isotherm (°C.).	Maximum diurnal range (°C.).	Station.	Isotherm (°C.).	Maximum diurnal range (°C.).
Dagupan	28	17.2	Aráyat	30	19.8
Isabela de Basilan	28	16.9	Dagupan	30	16.6
Bolinao	28	14.5	Cavite	30	12.0
Iloilo	28	13.2	Tárlac	29	21.0
Dapitan	28	11.5	Tuguegarao	29	19.6
Tárlac	27	22.5	Iba	29	18.0
Aráyat	27	21.8	Balaṅga	29	16.2
Iba	27	18.0	Biñan	29	15.2
Cottabato	27	16.3	Vigan	29	15.0
Bacólod	27	15.9	Dapitan	29	14.0
Dávao	27	15.6	Cápiz	29	13.9
Loón	27	13.6	Bolinao	29	13.6
San Fernando (La Unión)	27	13.2	Iloilo	29	13.1
Cavite	27	12.5	Marilao	28	18.1
Cápiz	27	11.0	Manila	28	17.8
Romblón	27	9.8	Pórac	28	16.6
Cebú	27	9.4	Catbalogan	28	16.1
Cuyo	27	7.4	Bacólod	28	14.9
Magálan	27	.....	San José de Buenavista	28	14.8
Tuguegarao	26	21.5	Dávao	28	14.3
Marilao	26	19.2	Tuburan	28	14.1
San José de Buenavista	26	18.1	Corregidor	28	13.5
Balaṅga	26	17.8	Tagbilaran	28	13.4
Pórac	26	17.8	Atimonan	28	13.0
Manila	26	17.3	San Fernando (La Unión)	28	12.0
Calbáyog	26	16.4	Loón	28	11.9
Catbalogan	26	16.2	Romblón	28	10.7
Tuburan	26	15.2	Cebú	28	9.7
Atimonan	26	13.9	Candón	28	8.8
Indán	26	13.8	Magálan	28	.....
Tagbilaran	26	12.5	San Isidro	27	22.8
Masinloc	26	12.5	Olongapó	27	17.8
Zamboanga	26	12.0	Calbáyog	27	16.0
Corregidor	26	11.2	Isabela de Basilan	27	14.8
Dáet	26	11.0	Aparri	27	14.1
Joló	26	10.2	Masinloc	27	13.6
Candón	26	10.2	Dáet	27	11.1
Vigan	26	.....	Zamboanga	27	11.0
Bayombong	26	.....	Gúbat	27	8.4
San Isidro	25	22.3	Bayombong	27	.....
Biñan	25	18.5	Ormoc	26	15.1
Olongapó	25	17.6	Boroṅgon	26	12.5
Ormoc	25	17.3	Maasin	26	12.3
Aparri	25	15.2	Santo Domingo, or Basco	26	10.9
Boroṅgon	25	12.5	Caraga	26	10.4
Maasin	25	12.0	Legaspi	26	10.1
Legaspi	25	11.6	Joló	26	9.8
Caraga	25	10.9	Surigao	26	8.9
Surigao	25	10.3			
Santo Domingo, or Basco	25	9.6			

TABLE 2.—*Maximum diurnal range of temperature at specified stations, with location of isotherm, by months*—Continued.

MAY.			JUNE.		
Station.	Isotherm (° C.).	Maximum diurnal range (° C.).	Station.	Isotherm (° C.).	Maximum diurnal range (° C.).
San Isidro	30	21.6	Tuguegarao	30	19.8
Aráyat	30	20.1	Tárlac	30	18.1
Vigan	30	16.3	Aráyat	30	17.9
Dagupan	30	15.8	Cápiz	30	16.2
Iba	30	15.5	Dagupan	30	15.3
Iloílo	30	14.3	Marilao	30	14.9
San Fernando (La Unión)	30	13.3	Vigan	30	13.5
Cavite	30	10.9	Atimonan	30	13.4
Tárlac	29	21.4	Dáet	30	13.0
Tuguegarao	29	21.2	Legaspi	30	12.7
Marilao	29	17.2	Cavite	30	11.3
Pórac	29	17.0	Biñan	30	11.2
Biñan	29	16.2	San Isidro	29	19.8
Manila	29	15.9	Aparri	29	15.8
Balañga	29	15.4	Pórac	29	15.4
Cottabato	29	14.3	Indán	29	14.5
Bolinao	29	13.8	Iba	29	14.4
Dapitan	29	13.2	Calbáyog	29	13.4
Atimonan	29	13.0	Balañga	29	11.7
San José de Buenavista	29	12.7	Tuburan	29	11.7
Cápiz	29	12.2	Bolinao	29	11.4
Romblón	29	10.9	Romblón	29	10.4
Candón	29	9.7	Palánoc	29	9.8
Olongapó	28	16.8	Candón	29	8.8
Aparri	28	14.8	Olongapó	28	15.7
Tuburan	28	13.6	Dapitan	28	14.2
Isabela de Basilan	28	13.3	Manila	28	13.8
Bacólod	28	13.2	Cottabato	28	13.2
Dávao	28	12.7	San Fernando (La Unión)	28	12.7
Masinloc	28	12.1	Iloílo	28	11.8
Tagbilaran	28	11.8	Corregidor	28	11.5
Loón	28	10.6	Dávao	28	10.6
Dáet	28	10.5	Santo Domingo, or Basco	28	10.4
Cebú	28	10.0	Gúbat	28	10.3
Legaspi	28	9.8	Masinloc	28	10.1
Cuyo	28	8.9	Zamboanga	28	10.0
Magálan	28	.....	Surigao	28	9.6
Ormoc	27	17.4	Cebú	28	9.4
Calbáyog	27	16.8	Catbalogan	28	9.4
Corregidor	27	13.7	Loón	28	9.3
Maasin	27	13.4	Tagbilaran	28	9.1
Caraga	27	11.0	Bacólod	27	12.1
Zamboanga	27	10.3	San José de Buenavista	27	12.0
Santo Domingo, or Basco	27	10.1	Isabela de Basilan	27	11.5
Gúbat	27	8.8	Boroñgon	27	11.5
Surigao	27	8.7	Caraga	27	10.6
Bayombong	27	.....	Cuyo	27	8.6
Boroñgon	26	11.5	Bayombong	27	.....
			Magálan	27	.....
			Maasin	26	14.6

TABLE 2.—*Maximum diurnal range of temperature at specified stations, with location of isotherm, by months*—Continued.

JULY.			SEPTEMBER.		
Station.	Isotherm. (°C.).	Maximum diurnal range (°C.).	Station.	Isotherm. (°C.).	Maximum diurnal range (°C.).
Nueva Cáceres	29	13.7	Tuburan	29	12.2
Dagupan	29	13.6	Cápiz	29	11.4
Atimonan	29	12.9	Nueva Cáceres	28	14.4
Cápiz	29	12.8	San Fernando (La Unión)	28	14.2
Iba	29	9.5	San Isidro	28	13.9
San Fernando (La Unión)	29	8.0	Atimonan	28	12.9
Manila	28	14.2	Dapitan	28	12.6
Tuburan	28	13.5	Tagbilaran	28	11.9
Legaspi	28	11.6	Caraga	28	11.8
Aparri	28	11.6	Legaspi	28	11.7
Aráyat	28	11.1	Surigao	28	10.3
Surigao	28	10.2	Cebú	28	8.3
Maasin	28	10.0	San José de Buenavista	28	7.8
Candón	28	9.2	Manila	27	14.3
Vigan	28	8.5	Dagupan	27	13.6
Dumaguete	28	7.9	Tárlac	27	13.5
Dáet	28	.....	Aparri	27	12.6
Tagbilaran	27	14.3	Ilóilo	27	12.1
Dapitan	27	12.8	Bacólod	27	11.0
Bacólod	27	12.0	Maasin	27	9.0
Ormoc	27	10.8	Dávao	27	9.4
Cebú	27	10.4	Magálan	27	.....
Caraga	27	9.6	Joló	26	12.3
Joló	27	9.5	Zamboanga	26	11.5
Corregidor	27	9.0	Aráyat	26	11.4
Magálan	27	.....	Ormoc	26	11.4
Bayombong	27	.....	Dumaguete	26	11.2
Zamboanga	27	.....	Candón	26	10.6
Ilóilo	26	17.9	Vigan	26	9.5
Dávao	26	10.8	Bayombong	26	.....
			Cottabato	25	21.7

AUGUST.			OCTOBER.		
Dagupan	29	11.7	Corregidor	29	13.3
San Fernando (La Unión)	29	9.5	Dagupan	28	15.0
Manila	28	14.6	Aráyat	28	14.4
Aparri	28	13.4	Tagbilaran	28	11.3
Atimonan	28	12.8	San José de Buenavista	28	11.0
Tagbilaran	28	12.3	Atimonan	28	10.7
Tárlac	28	12.0	Iba	28	10.3
Tuburan	28	11.8	Dáet	28	.....
Nueva Cáceres	28	11.5	San Isidro	27	15.3
Legaspi	28	11.1	Manila	27	15.3
San Isidro	28	10.5	Tárlac	27	14.8
Aráyat	28	10.1	Vigan	27	14.4
Surigao	28	10.0	Dapitan	27	13.6
Maasin	28	9.7	Ilóilo	27	11.7
Cápiz	28	9.6	Legaspi	27	11.5
Dáet	28	.....	Caraga	27	11.0
Dumaguete	27	13.7	Tuburan	27	10.9
Caraga	27	11.4	Dávao	27	10.8
Dapitan	27	11.0	Zamboanga	27	10.7
Joló	27	10.4	Bacólod	27	10.6
Ormoc	27	10.3	San Fernando (La Unión)	27	10.3
Dávao	27	9.5	Joló	27	9.9
Cebú	27	9.0	Maasin	27	9.6
Candón	27	7.3	Cebú	27	9.4
Iba	27	7.1	Cápiz	27	9.4
Vigan	27	6.4	Surigao	27	8.9
Zamboanga	27	.....	Candón	27	7.9
Bacólod	26	9.6	Ormoc	26	12.1
Bayombong	26	.....	Aparri	26	11.5
Ilóilo	25	12.1	Bayombong	26	.....
Cottabato	23	17.7			

TABLE 2.—*Maximum diurnal range of temperature at specified stations, with location of isotherm, by months*—Continued.

NOVEMBER.			DECEMBER.		
Station.	Isotherm (° C.).	Maximum diurnal range (° C.).	Station.	Isotherm (° C.).	Maximum diurnal range (° C.).
Dapitan	28	14.8	Dapitan	28	12.6
Tagbilaran	28	12.1	Dagupan	27	15.2
Dagupan	27	15.5	Bolinao	27	13.5
Aráyat	27	15.1	Atimonan	27	12.3
Cottabato	27	13.3	Tagbilaran	27	12.2
Corregidor	27	12.8	Zamboanga	27	11.5
Bolinao	27	12.6	Caraga	27	10.2
Iba	27	12.2	Romblón	27	8.7
Atimonan	27	11.9	Cebú	27	8.6
Zamboanga	27	11.0	Joló	27	.....
Iloilo	27	10.3	Aráyat	26	16.2
Cápiz	27	10.3	Calbáyog	26	13.8
Caraga	27	10.2	Tuburan	26	13.0
Cebú	27	10.1	Bacólod	26	12.7
Dávao	27	9.9	Cápiz	26	11.8
Joló	27	9.7	Dávao	26	11.0
Romblón	27	8.0	Iloilo	26	10.9
Manila	26	16.9	Maasin	26	9.4
San Isidro	26	15.8	Surigao	26	7.6
Tárlac	26	15.0	Manila	25	17.7
Vigan	26	14.2	Tárlac	25	17.0
Calbáyog	26	13.9	Cottabato	25	16.0
San Fernando (La Unión)	26	12.6	Ormoc	25	14.8
Tuguegarao	26	12.3	Tuguegarao	25	13.6
San José de Buenavista	26	12.2	Legaspi	25	11.1
Bacólod	26	11.9	Candón	25	10.4
Legaspi	26	11.2	Dáet	25	10.0
Tuburan	26	11.2	Magálan	25	.....
Maasin	26	10.2	Aparri	24	12.7
Candón	26	10.2	Corregidor	24	10.8
Surigao	26	9.2	Santo Domingo, or Basco	24	10.6
Dáet	26	7.9	Bayombong	24	.....
Magálan	26	.....			
Aparri	25	13.9			
Ormoc	25	12.7			
Bayombong	25	.....			

Some of the conclusions suggested by the preceding tables are these:

1. Taking into account the general thermic aspect of the archipelago, the period of greatest heat comprises the months of April, May, and June, during which the isotherm 30° passes through several islands of the group.

2. Given equal elevations above sea level, the temperature is generally milder on the coasts than in the interior of the islands, especially if they are of considerable dimensions.

3. The annual oscillation of temperature, as exhibited by the tables, shows also that only north of the parallel of 18° north latitude there is a pronounced difference between the extreme seasons of the year, viz, winter and summer. In the greater part of the archipelago lying south of +18° this difference almost disappears. There are, however, three different thermic conditions met with in these regions. At some points the temperature is rather high throughout the year, the annual variation being but small; at others the temperature is always sufficiently temperate, varying only little during the year. Other places finally combine the characteristics of the two preceding classes, being

hot during one part of the year and temperate during the other; they have thus two seasons.

There are consequently regions in the archipelago which we may call hot, others which we may designate as intermediate, and finally such as may be termed cool, or better, mild, throughout the year.

The first class comprises all places at which the mean temperature of the hottest months reaches 30° or 31° C., without any great annual oscillation. The second class is formed by the parts of the archipelago whose mean temperature during the warmest months does not exceed 29° C., and which likewise do not show great annual thermic variation. The third class is made up of those regions in which the mean temperature of April, May, and June is not higher than 27° C.

The following list gives the regions belonging respectively to each of the three classes:

I. *Regions of high temperature.*

The great valley of the Cagayán river, from Lalloc to the northern part of the province of Nueva Vizcaya.

The coast along the provinces Ilocos Norte, Ilocos Sur, and La Unión.

The coast along the province of Zambales.

The plains of Pangasinán.

The eastern part of Tárlac and the western part cf Nueva Écija to the south of the Caraballo Sur mountains.

The lowlands in the provinces of Pampanga and Bulacán.

The bay of Bacoor (as far as the harbor of Cavite) and the south shore of the Laguna de Bay.

The northern coast line along Tayabas and Ambos Camarines, also the southeast extremity of Luzón (except Sorsogón).

The northern part of the island of Panay and the Strait of Iloílo.

II. *Regions of intermediate temperature.*

The peninsula of Bolinao.

The portion of the province of Pampanga which borders on Zambales and Bataán.

The highlands of the province of Bulacán.

The province of Rizal.

The northern and eastern parts of Bataán.

Manila and its surroundings toward the east.

The island of Corregidor.

The bay of Sorsogón.

The west coast of Sámar.

The Romblón group of islands.

The west coast of Negros.

The west coast of Panay.

The island of Cebú.
The west coast of Bohol.
The peninsula of Zamboanga.

III. *Regions of mild temperature.*

The east coast of the province of Sorsogón.
The islands of the Strait of San Bernardino.
A great part of the eastern Visayas—i. e., Sámar (especially the east coast), Leyte, and the adjacent islands.
The peninsula of Surigao.
The east coast of Mindanao.
The archipelago of Joló.

THERMIC CONDITIONS IN MANILA.

We shall now discuss particularly the most important features of the temperature in Manila, inasmuch as they can be applied to many other regions of the archipelago, as, for instance, to the interior of Luzón south of Caraballos Sur, or the provinces of Nueva Écija, Pangasinán, Pampanga, Bulacán, Rizal, Cavite, Batangas, and to the other islands of the archipelago where the annual thermic oscillation ranges between 2.5° and 4°.

Table 3 gives the mean temperature for each month and year corresponding to a period of twenty years, together with the resultant mean normal monthly and annual temperatures.

TABLE 3.—*Mean monthly and annual temperatures: 1883–1902.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1883	25.2	25.6	27.7	28.2	28.7	27.1	26.7	27.4	26.5	26.5	26.0	24.1	26.6
1884	23.6	24.7	26.4	27.8	28.2	27.0	26.3	26.5	26.6	26.6	25.9	24.3	26.2
1885	24.6	24.4	26.1	27.3	28.5	28.3	27.3	27.1	27.6	27.3	26.4	25.2	26.7
1886	25.2	24.7	26.4	28.3	28.5	27.5	27.0	27.5	27.1	26.6	26.0	24.9	26.6
1887	25.2	25.3	26.7	27.7	27.7	27.6	27.1	27.3	26.3	26.4	26.1	25.4	26.6
1888	24.9	25.2	27.5	28.7	29.2	27.8	26.1	27.2	27.6	26.3	26.5	26.0	26.9
1889	25.8	26.4	27.5	29.4	30.3	28.7	27.5	27.3	27.5	27.1	26.5	24.9	27.4
1890	25.6	25.9	27.3	27.9	27.9	27.3	27.3	27.4	26.5	26.1	25.4	25.2	26.6
1891	24.6	25.0	26.7	28.6	29.8	27.6	26.8	26.6	26.8	27.4	26.3	25.5	26.8
1892	25.3	26.0	27.1	28.0	28.8	28.1	27.3	27.0	26.7	27.1	25.8	25.0	26.9
1893	24.1	25.4	26.5	28.3	27.8	27.7	27.3	27.7	26.6	26.5	25.7	25.4	26.6
1894	24.7	25.0	26.6	28.2	28.0	27.7	27.2	27.3	26.8	26.9	25.6	25.0	26.6
1895	24.7	25.1	26.7	28.3	28.0	27.8	27.5	27.1	26.9	27.5	25.8	25.1	26.7
1896	24.6	25.8	27.2	28.4	27.6	28.0	27.3	26.4	27.2	27.2	26.4	25.3	26.8
1897	25.7	26.3	27.7	29.0	29.4	29.5	27.5	27.1	27.2	27.3	26.8	25.5	27.4
1898	25.5	26.2	26.3	27.9	28.2	27.6	26.7	27.3	27.2	26.9	26.1	25.7	26.8
1899	25.3	25.0	25.7	27.9	28.1	27.5	27.0	27.0	27.3	27.0	25.8	25.7	26.6
1900	25.1	26.0	27.5	28.9	29.8	28.3	27.7	27.4	27.5	27.2	26.5	25.5	27.3
1901	25.3	25.2	26.6	28.4	28.9	28.3	27.6	26.8	27.7	27.0	26.4	25.0	26.9
1902	25.4	24.0	26.7	28.1	28.8	28.2	27.2	27.0	26.7	26.8	26.1	25.8	26.7
Average	25.0	25.4	26.8	28.3	28.6	27.9	27.1	27.1	27.0	26.9	26.1	25.2	26.8

Table 4 gives a comparison of the normal temperature for the year in Manila with the temperature peculiar to each month.

TABLE 4.—*The normal monthly means compared with the mean annual temperature and with the extreme monthly means: 1883–1902.*

[° C.]

MONTH.	Normal monthly mean.	Monthly minus annual mean.	EXTREME DEPARTURES OF MONTHLY MEANS FROM NORMAL MONTHLY MEAN.	
			Positive.	Negative.
January	25.0	−1.8	0.8 (1889)	1.4 (1884)
February	25.4	−1.4	1.0 (1889)	1.4 (1902)
March	26.8	0.0	0.9 (1883, 1897)	1.1 (1899)
April	28.3	+1.5	1.1 (1889)	1.0 (1885)
May	28.6	+1.8	1.7 (1889)	1.0 (1896)
June	27.9	+1.1	1.6 (1897)	0.9 (1884)
July	27.1	+0.3	0.6 (1900)	1.0 (1888)
August	27.1	+0.3	0.6 (1893)	0.7 (1896)
September	27.0	+0.2	0.7 (1901)	0.7 (1887)
October	26.9	+0.1	0.6 (1895)	0.8 (1890)
November	26.1	−0.7	0.7 (1897)	0.7 (1890)
December	25.2	−1.6	0.8 (1888)	1.1 (1883)
Year	26.8°	.....	.....	.....

The extreme departures of the annual means from the normal annual mean were: Positive 0.6° in 1889 and 1897, and negative 0.6° in 1884.

In Table 5 there will be found the monthly and annual maxima of temperature for a period of twenty years, and also the average monthly and annual temperatures during this period.

TABLE 5.—*Monthly and annual maxima of temperature in Manila: 1883–1902.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual maximum.
1883	33.2	34.1	34.8	35.8	35.8	33.9	33.6	33.3	33.2	32.3	32.5	31.7	35.8
1884	30.5	31.4	32.5	34.1	35.2	33.4	31.8	32.2	32.0	31.9	32.9	31.1	35.2
1885	30.6	32.1	33.9	34.0	35.7	35.6	33.1	31.8	33.3	33.3	32.1	32.3	35.7
1886	31.8	32.9	33.2	35.5	34.9	34.4	33.3	33.3	32.9	33.4	33.4	31.7	35.5
1887	32.1	32.8	33.7	35.0	36.0	35.0	33.2	33.8	32.4	32.7	32.9	32.7	36.0
1888	32.0	33.8	35.3	35.8	36.7	34.4	33.0	33.4	34.2	33.7	32.4	33.3	36.7
1889	33.0	33.8	35.0	37.2	37.8	35.0	33.5	33.9	34.2	33.1	33.1	31.4	37.8
1890	32.3	32.8	34.8	35.6	35.7	34.7	33.1	33.3	33.2	32.2	32.2	32.1	35.7
1891	31.4	32.5	33.7	35.4	37.7	33.8	32.8	31.1	32.3	34.9	32.9	31.6	37.7
1892	32.3	35.4	34.0	35.2	36.9	36.0	33.4	34.6	32.1	33.3	32.2	31.1	36.9
1893	31.7	34.4	35.5	36.1	35.7	35.4	33.8	33.7	32.2	31.7	33.2	31.2	36.1
1894	31.7	32.4	34.1	35.6	35.4	34.9	34.9	33.8	33.2	33.9	31.7	32.2	35.6
1895	33.0	33.7	35.4	36.2	35.4	36.1	33.9	33.4	34.0	34.1	32.9	32.3	36.2
1896	32.3	32.9	35.0	36.2	35.0	35.3	34.4	32.1	33.3	34.4	32.7	33.2	36.2
1897	33.9	33.2	34.6	35.4	37.2	35.6	34.1	33.5	33.1	32.9	33.3	31.9	37.2
1898	32.1	32.5	33.6	34.9	35.4	33.8	32.7	31.7	34.3	33.2	32.8	31.7	35.4
1899	31.7	31.8	32.2	34.8	34.6	35.0	31.5	32.4	34.3	33.4	32.1	31.6	35.0
1900	32.2	32.3	34.6	37.1	36.2	35.2	35.0	35.2	32.8	33.7	33.4	33.4	37.1
1901	32.0	31.8	35.6	36.5	37.3	36.2	35.0	31.7	35.2	34.1	33.0	31.8	37.3
1902	32.1	31.9	34.7	35.7	36.1	35.9	33.9	32.2	34.4	33.8	32.7	33.1	36.1
Average	32.1	32.9	34.3	35.5	36.1	35.0	33.5	33.0	33.3	33.3	32.2	32.1	36.3

In Table 6 we give similar values for the extreme minima of temperature.

TABLE 6.—*Monthly and annual minima of temperature in Manila: 1883–1902.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual minimum.
1883	18.3	19.2	20.1	22.8	22.6	22.8	22.8	22.8	22.8	22.2	21.0	16.7	16.7
1884	18.0	17.9	19.9	21.0	23.1	22.8	21.6	22.2	21.9	21.8	19.0	17.5	17.5
1885	18.6	18.3	17.4	20.6	22.2	23.1	22.9	22.2	22.9	22.4	21.0	18.4	17.4
1886	16.7	17.6	18.9	20.7	22.8	22.8	22.4	21.9	22.9	21.9	20.7	19.2	16.7
1887	17.2	17.2	19.9	21.1	22.3	21.9	22.8	22.2	22.2	20.6	21.2	18.3	17.2
1888	17.7	16.1	19.3	21.4	22.8	22.8	22.3	23.2	23.1	21.7	21.1	17.7	16.1
1889	18.2	20.0	19.4	21.1	23.3	22.8	22.8	22.2	22.8	22.9	21.4	19.4	18.2
1890	17.8	18.2	20.5	21.9	22.9	22.2	22.4	23.3	22.5	20.4	18.3	17.8	17.8
1891	17.8	17.2	18.3	21.0	22.6	22.2	21.1	22.7	22.2	21.2	21.1	19.3	17.2
1892	19.2	18.6	20.7	20.7	21.7	22.9	22.5	22.1	21.8	21.7	19.2	15.7	15.7
1893	17.2	17.8	18.9	20.4	22.5	21.7	22.8	23.1	21.7	21.1	20.8	19.2	17.2
1894	17.2	17.9	18.4	18.9	22.3	22.8	22.9	22.8	22.5	21.6	18.9	19.3	17.2
1895	18.3	18.2	18.2	21.0	22.9	21.6	21.6	22.6	21.4	20.6	18.8	18.3	18.2
1896	17.3	18.3	18.3	19.8	22.9	23.4	22.8	20.6	23.3	21.8	21.2	18.7	17.3
1897	17.9	18.7	19.9	22.7	23.9	23.4	22.4	22.3	23.1	22.2	21.7	20.1	17.9
1898	17.1	18.4	19.8	21.0	23.0	22.9	22.9	22.5	22.5	22.7	21.7	19.4	17.1
1899	19.4	18.4	17.2	20.2	22.3	22.2	21.7	22.1	23.1	21.4	19.6	19.3	17.2
1900	16.8	19.0	19.5	21.6	23.7	23.4	22.9	22.4	22.6	21.8	19.1	17.7	16.8
1901	17.6	18.6	17.4	19.9	21.3	22.2	22.4	22.5	22.7	21.4	21.4	16.6	16.6
1902	19.2	15.7	17.7	18.7	22.0	22.3	21.9	22.1	20.9	19.6	18.8	17.7	15.7
Average	17.9	18.0	18.5	20.8	22.7	22.6	22.4	22.3	22.4	21.4	20.3	18.3	17.1

It is also very useful to know not only the absolute extremes of temperature, but also the mean of the extreme temperature of each month and year. In Table 7 we give the mean of thermic maxima for each month and year during a period of eighteen years, and in Table 8, the corresponding minima.

TABLE 7.—*Monthly mean of the maxima of temperature in Manila: 1885–1902.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1885	28.8	29.4	31.2	32.3	33.4	32.8	30.3	30.2	31.3	31.6	30.4	29.8	31.0
1886	29.5	29.5	31.6	33.3	33.1	31.7	31.2	31.3	30.5	30.7	30.1	28.7	30.9
1887	30.2	30.3	31.8	32.4	32.4	31.8	30.1	31.4	29.2	30.5	29.9	30.7	30.9
1888	29.6	31.0	33.2	34.4	34.3	31.4	29.0	30.1	31.7	31.0	30.9	30.6	31.4
1889	30.8	31.6	33.2	35.1	35.8	33.2	31.7	31.0	31.7	31.1	30.2	28.4	32.0
1890	30.5	31.1	32.9	33.1	32.9	31.7	30.7	31.4	29.6	29.8	29.6	29.6	31.1
1891	29.0	30.0	32.1	33.9	35.0	31.2	29.8	29.6	29.6	32.1	30.4	29.5	31.0
1892	29.5	31.4	32.4	33.5	33.9	32.9	30.9	31.4	29.8	30.9	29.7	29.2	31.3
1893	29.1	31.0	31.8	33.9	32.1	32.5	30.9	30.8	29.7	30.2	29.6	29.3	30.9
1894	29.7	29.9	31.7	34.0	33.0	31.9	30.8	30.9	30.3	30.9	29.8	29.0	31.0
1895	29.8	30.5	32.1	33.5	32.0	32.2	31.6	30.8	29.9	32.2	30.4	30.0	31.3
1896	29.9	31.6	33.0	33.8	31.3	31.8	30.9	29.1	30.5	31.0	31.5	30.5	31.2
1897	30.9	31.6	32.6	34.0	34.1	33.4	31.2	30.5	31.3	31.0	31.0	29.6	31.8
1898	29.8	30.9	30.6	32.5	32.5	31.2	30.4	29.7	31.4	30.6	29.4	29.9	30.7
1899	29.5	29.7	30.2	32.7	32.2	32.1	29.4	30.0	30.9	31.1	29.6	30.5	30.7
1900	30.1	30.9	32.6	34.1	34.6	32.2	32.1	30.6	30.6	31.1	30.6	29.6	31.6
1901	30.5	29.5	31.9	34.3	33.7	32.2	31.7	30.0	30.9	30.4	30.2	29.5	31.2
1902	29.6	28.7	32.1	33.7	33.2	31.8	30.6	29.7	29.7	31.5	30.8	30.6	31.0
Average	29.8	30.5	32.1	34.6	33.3	32.1	30.7	30.5	30.5	31.0	30.2	29.7	31.2

TABLE 8.—*Monthly mean of the minima of temperature in Manila: 1885–1902.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1885	20.5	20.0	21.4	23.0	24.2	24.6	24.1	24.0	24.0	23.6	23.1	21.4	22.8
1886	21.1	20.3	21.4	24.0	24.6	24.1	23.8	23.8	24.1	23.5	22.1	21.7	22.9
1887	20.8	20.5	22.5	23.2	23.8	23.8	24.3	23.7	23.6	22.9	22.9	21.8	22.8
1888	20.6	19.5	22.4	23.0	24.2	24.3	23.7	23.7	23.9	23.4	22.6	21.9	22.8
1889	21.4	21.6	22.1	23.8	24.9	24.7	24.1	24.0	24.0	23.8	23.4	22.0	23.3
1890	21.5	21.2	22.2	23.5	23.9	23.7	23.8	23.6	23.8	23.1	21.7	20.8	22.7
1891	20.7	19.9	21.4	23.3	24.6	23.9	23.7	23.8	23.9	23.2	22.8	22.2	22.8
1892	21.6	21.3	22.5	22.8	24.1	24.0	24.0	23.3	23.7	23.6	22.4	21.6	22.9
1893	19.5	20.1	21.5	23.2	24.1	23.7	24.0	24.2	23.4	23.2	22.5	22.0	22.6
1894	20.1	20.6	21.9	23.0	23.8	24.0	23.8	24.0	24.7	23.3	22.0	21.5	22.7
1895	20.2	20.2	21.8	23.2	24.4	24.3	23.7	23.8	24.0	23.3	21.9	20.9	22.6
1896	19.8	20.6	22.0	22.7	24.3	24.5	24.1	23.8	24.0	23.9	22.2	20.7	22.7
1897	20.7	21.2	22.8	24.1	25.2	25.3	24.0	24.1	24.1	24.0	23.2	22.3	23.4
1898	21.7	21.6	22.5	23.3	24.0	24.3	23.6	24.3	23.5	23.7	23.2	22.0	23.1
1899	21.8	20.7	21.4	23.1	24.1	23.5	24.4	23.8	24.2	23.4	22.5	21.5	22.9
1900	20.5	21.3	22.2	24.4	25.0	24.5	24.1	24.3	24.2	22.8	22.7	21.5	23.1
1901	19.9	20.9	21.2	22.3	23.5	23.5	23.2	23.3	23.8	22.8	22.5	20.4	22.3
1902	21.0	18.8	20.7	22.3	23.5	23.5	23.2	23.4	22.8	21.9	21.0	20.5	21.9
Average	20.7	20.6	21.9	23.2	24.2	24.1	23.9	23.8	23.9	23.3	22.5	21.5	22.8

In Table 9 we begin to treat particularly of the oscillation of the air in Manila corresponding to each month and year for a period of eighteen years, 1885–1902.

TABLE 9.—*Mean monthly oscillation of temperature in Manila: 1885–1902.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1885	8.3	9.4	9.8	9.3	9.2	8.2	6.2	6.2	7.3	8.0	7.3	8.4	8.1
1886	8.4	9.2	10.2	9.3	8.5	7.6	7.4	7.5	6.4	7.2	7.3	7.0	8.0
1887	9.4	9.8	9.3	9.2	8.6	8.0	5.8	7.7	5.6	7.6	7.0	8.9	8.1
1888	9.0	11.5	10.8	11.4	10.1	7.1	5.3	6.4	7.8	7.6	8.3	8.7	8.6
1889	9.4	10.0	11.1	11.3	10.9	8.5	7.6	7.0	7.7	7.3	6.8	6.4	8.7
1890	9.0	9.9	10.7	9.6	9.0	8.0	6.9	7.8	5.8	6.7	7.9	8.8	8.4
1891	8.3	10.1	10.7	10.6	10.4	7.3	6.1	5.8	5.7	8.9	7.6	7.3	8.2
1892	7.9	10.1	9.9	10.7	9.8	8.9	6.9	8.1	6.1	7.3	7.3	7.6	8.4
1893	9.6	10.9	10.3	10.7	8.0	8.8	6.9	6.6	6.3	7.0	7.1	7.3	8.3
1894	9.6	9.3	9.8	11.0	9.2	7.9	7.0	6.9	5.6	7.6	7.8	7.5	8.3
1895	9.6	10.3	10.3	10.3	7.6	7.9	7.9	7.0	5.9	8.9	8.5	9.1	8.6
1896	10.1	11.0	11.0	11.1	7.0	7.3	6.8	5.3	6.5	7.1	9.3	9.8	8.5
1897	10.2	10.4	9.8	9.9	8.9	8.1	7.2	6.4	7.2	7.0	7.8	7.3	8.4
1898	8.1	9.3	8.1	9.2	8.5	6.9	6.8	5.4	7.9	6.9	6.2	7.9	7.6
1899	7.7	9.0	8.8	9.6	8.1	8.6	5.0	6.2	6.7	7.7	7.1	9.0	7.8
1900	9.6	9.6	10.4	10.7	9.6	7.7	8.0	6.3	6.4	8.3	7.9	8.1	8.6
1901	10.6	8.6	10.7	12.0	10.2	8.7	8.5	6.7	7.1	7.6	7.7	9.1	9.0
1902	8.6	9.9	11.4	11.4	9.7	8.3	6.4	6.3	6.9	9.6	9.8	10.1	9.0
Average	9.1	9.9	10.2	10.4	9.1	8.0	6.3	6.6	6.6	7.7	7.7	8.2	8.3

In Tables 10 and 11 we give the mean of maximum oscillation, and in Tables 12 and 13 the mean of minimum oscillation, corresponding to each month and year, 1883–1902.

TABLE 10.—*Maximum monthly and annual variation of temperature in Manila: 1883–1898.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual maximum.
1883	12.9	12.9	13.2	13.0	10.9	10.0	9.8	9.4	9.4	10.0	11.0	10.7	13.2
1884	11.3	11.1	11.9	11.8	10.8	9.0	8.6	8.8	9.3	9.3	9.9	10.3	11.9
1885	11.2	13.5	14.3	12.7	11.6	11.0	8.9	9.6	9.4	9.8	10.2	11.1	14.3
1886	11.9	12.0	12.1	12.3	11.1	10.2	10.9	10.0	9.3	11.2	11.8	11.1	12.3
1887	13.4	13.7	12.6	12.5	11.6	11.1	9.3	11.0	8.4	11.1	10.5	12.1	13.7
1888	11.5	13.9	13.4	13.2	13.0	9.4	9.2	8.4	10.9	11.0	10.7	11.3	13.9
1889	13.4	12.5	14.0	14.3	13.0	12.2	10.2	10.6	10.6	9.5	10.8	10.6	14.3
1890	12.8	12.7	13.4	12.8	11.4	11.5	10.2	10.7	9.3	10.7	11.5	12.0	13.4
1891	12.0	14.5	13.6	14.1	12.5	9.7	8.9	7.7	8.8	11.0	10.8	10.6	14.5
1892	12.3	15.0	13.3	13.4	13.2	12.0	10.0	11.5	9.6	10.6	11.4	12.7	15.0
1893	12.7	14.3	13.8	13.0	11.4	11.4	9.8	9.8	8.6	9.7	11.5	10.5	14.3
1894	13.9	13.2	13.5	16.4	12.1	11.0	11.4	10.0	9.7	10.9	10.4	10.3	16.4
1895	14.7	12.9	14.6	13.3	11.4	11.2	10.1	9.4	9.7	11.2	12.2	12.8	14.7
1896	14.0	14.3	14.9	13.7	11.2	10.3	10.0	8.9	9.9	11.0	11.3	13.8	14.9
1897	13.4	12.9	13.4	11.6	12.1	12.1	9.8	9.7	9.3	9.9	10.9	10.9	13.4
1898	13.0	12.9	12.0	12.2	11.6	10.4	9.5	8.9	11.4	9.3	9.6	11.2	13.0
Average	12.8	13.3	13.4	13.1	11.8	10.8	9.8	9.7	9.6	10.4	10.9	11.4	14.0

TABLE 11.—*Maximum monthly and annual variation of temperature in Manila: 1899–1902.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual maximum.
1899	12.8	13.4	15.0	14.6	12.3	12.8	9.8	10.3	11.2	12.0	12.5	12.3	15.0
1900	15.4	13.3	15.1	15.5	12.5	11.8	12.1	12.8	10.2	11.9	14.3	15.7	15.7
1901	14.4	13.2	16.2	16.6	16.0	14.0	12.6	9.2	12.5	12.7	11.6	15.2	16.6
1902	12.9	16.2	17.0	17.0	14.1	13.6	12.0	10.1	13.5	14.2	13.9	15.4	17.0
Average	13.7	14.0	15.5	15.9	13.7	13.0	11.6	10.6	11.8	12.7	13.1	14.6	16.1

These tables are intended to show the absolute variation of temperature during each month by comparing the absolute maximum and the absolute minimum for the month, and the highest range for each year by comparing the absolute extremes during the year.

TABLE 12.—*Minimum monthly and annual variation of temperature in Manila: 1883–1898.*

[° C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual minimum.
1883	4.4	6.5	6.7	4.3	2.8	3.9	1.6	3.0	2.1	1.8	1.8	4.6	1.6
1884	4.8	4.5	6.2	5.9	3.2	3.1	2.6	2.8	2.4	5.2	3.4	3.4	2.4
1885	5.2	6.8	5.2	4.4	6.4	3.5	3.4	4.1	2.6	5.9	4.1	6.0	2.6
1886	5.9	6.2	6.9	5.8	5.5	5.0	3.6	2.8	2.4	1.9	4.0	3.0	1.9
1887	4.5	6.6	6.3	4.2	5.5	4.7	3.1	4.0	2.9	2.5	2.7	4.1	2.5
1888	4.9	8.3	7.9	7.7	5.0	2.9	2.5	2.9	5.1	2.6	5.0	2.1	2.1
1889	5.1	7.2	8.1	7.2	7.1	5.6	2.7	3.5	4.3	4.0	2.8	1.2	1.2
1890	6.2	7.1	8.8	4.3	5.8	2.6	1.5	5.4	1.1	2.6	2.9	4.7	1.1
1891	2.5	6.0	6.6	7.4	5.6	2.3	2.6	2.9	3.2	5.6	2.1	3.7	2.1
1892	2.0	6.2	6.3	7.1	7.3	5.3	4.0	4.0	2.7	3.5	3.2	5.1	2.0
1893	5.4	6.8	6.2	6.7	2.2	1.6	2.4	2.8	3.4	2.9	2.2	5.0	1.6
1894	5.4	6.5	5.6	6.5	5.3	3.1	3.6	3.6	2.0	5.5	3.1	5.0	2.0
1895	5.5	6.5	5.9	6.7	2.7	2.9	4.5	4.1	2.5	4.7	4.4	5.0	2.5
1896	5.8	8.0	7.6	6.9	2.9	2.9	4.2	2.7	3.8	2.7	6.0	7.2	2.7
1897	6.2	7.2	4.7	7.9	4.8	4.3	3.9	1.9	2.7	2.4	3.5	3.8	1.9
1898	3.7	2.9	2.2	5.4	3.2	3.5	3.3	2.2	5.6	3.2	1.8	5.5	1.8
Average	4.8	6.5	6.3	6.2	4.7	3.6	3.1	3.3	3.1	3.6	3.3	4.3	2.0

TABLE 13.—*Minimum monthly and annual variation of temperature in Manila: 1899–1902.*

[°C.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual minimum.
1899	3.2	3.5	4.0	4.4	2.6	0.9	1.5	0.4	0.1	0.2	0.0	2.7	0.0
1900	5.6	5.0	5.0	7.0	6.2	0.6	3.2	1.6	0.4	0.8	1.6	1.2	0.4
1901	5.3	4.2	2.9	4.7	3.6	4.0	2.3	3.7	1.6	2.2	2.8	0.5	0.5
1902	4.8	5.1	5.8	2.9	5.4	2.7	1.5	1.1	2.2	6.3	5.1	3.3	1.1
Average	4.7	4.4	4.4	4.7	4.4	2.0	2.1	1.7	1.1	2.4	2.4	1.9	0.5

Table 14 presents an exhaustive account of the slightest changes of temperature in Manila.

TABLE 14.—*Differences between the hourly means of temperature in Manila compared between themselves, and between the same hourly means and the monthly means.*

[°C.]

HOUR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual.
1 a. m.	−2.0	−2.2	−2.4	−2.5	−2.2	−2.0	−1.6	−1.5	−1.4	−1.8	−1.7	−1.8	−1.93
0-1 a. m.	−0.3	−0.5	−0.5	−0.5	−0.4	−0.3	−0.2	−0.2	−0.1	−0.3	−0.2	−0.3	−0.32
2 a. m.	−2.4	−2.6	−2.8	−2.9	−2.5	−2.2	−1.8	−1.7	−1.6	−2.0	−1.9	−2.0	−2.20
1-2 a. m.	−0.4	−0.4	−0.4	−0.4	−0.3	−0.2	−0.2	−0.2	−0.2	−0.2	−0.2	−0.2	−0.27
3 a. m.	−2.7	−3.0	−3.2	−3.4	−2.9	−2.5	−2.0	−1.9	−1.7	−2.3	−2.2	−2.3	−2.51
2-3 a. m.	−0.3	−0.4	−0.4	−0.5	−0.4	−0.3	−0.2	−0.2	−0.1	−0.3	−0.3	−0.3	−0.31
4 a. m.	−3.1	−3.4	−3.6	−3.9	−3.2	−2.7	−2.2	−2.1	−1.9	−2.5	−2.5	−2.5	−2.80
3-4 a. m.	−0.4	−0.4	−0.4	−0.5	−0.3	−0.2	−0.2	−0.2	−0.2	−0.2	−0.3	−0.2	−0.29
5 a. m.	−3.4	−3.9	−4.0	−4.3	−3.5	−2.9	−2.4	−2.2	−2.0	−2.6	−2.6	−2.8	−3.05
4-5 a. m.	−0.3	−0.5	−0.4	−0.4	−0.2	−0.2	−0.2	−0.1	−0.1	−0.1	−0.1	−0.3	−0.25
6 a. m.	−3.6	−4.1	−4.2	−4.5	−3.4	−2.8	−2.4	−2.3	−2.1	−2.7	−2.8	−3.0	−3.16
5-6 a. m.	−0.2	−0.2	−0.2	−0.2	−0.1	−0.1	−0.0	−0.1	−0.1	−0.1	−0.2	−0.2	−0.11
7 a. m.	−3.4	−3.7	−3.3	−2.7	−1.6	−1.6	−1.4	−1.4	−1.2	−1.8	−2.1	−2.5	−2.23
6-7 a. m.	0.2	0.4	0.9	1.8	1.8	1.2	1.0	0.9	0.9	0.9	0.7	0.5	0.93
8 a. m.	−1.7	−1.5	−0.9	−0.1	0.4	0.2	0.0	0.1	0.0	−0.3	−0.7	−1.1	−0.49
7-8 a. m.	1.7	2.2	2.4	2.6	2.0	1.8	1.4	1.3	1.2	1.5	1.4	1.4	1.74
9 a. m.	0.6	0.8	1.1	1.1	1.4	1.3	1.0	0.9	1.0	1.0	0.7	0.6	0.96
8-9 a. m.	2.3	2.3	2.0	1.2	1.0	1.1	1.0	1.0	1.0	1.3	1.4	1.7	1.45
10 a. m.	1.6	1.6	1.6	1.6	1.8	2.0	1.7	1.5	1.7	1.8	1.7	1.6	1.68
9-10 a. m.	1.0	0.8	0.5	0.5	0.4	0.7	0.7	0.6	0.7	0.8	1.0	1.0	0.72
11 a. m.	2.2	2.3	2.1	2.2	2.4	2.4	2.1	2.0	2.0	2.3	2.3	2.4	2.22
10-11 a. m.	0.6	0.7	0.5	0.6	0.6	0.4	0.4	0.5	0.3	0.5	0.6	0.8	0.54
12 noon	2.8	2.8	2.8	2.9	2.9	2.7	2.4	2.2	2.3	2.7	2.6	2.7	2.65
11-12 a. m.	0.6	0.5	0.7	0.7	0.5	0.3	0.3	0.2	0.3	0.4	0.3	0.3	0.43
1 p. m.	3.3	3.7	3.6	3.8	3.4	3.0	2.6	2.5	2.5	2.9	2.9	3.1	3.11
12-1 p. m.	0.5	0.9	0.8	0.9	0.5	0.3	0.2	0.3	0.2	0.2	0.3	0.4	0.46
2 p. m.	3.8	4.2	4.2	4.3	3.5	3.1	2.6	2.4	2.4	2.9	2.9	3.2	3.29
1-2 p. m.	0.5	0.5	0.6	0.5	0.1	0.1	0.0	−0.1	−0.1	0.0	0.0	0.1	0.18
3 p. m.	4.0	4.4	4.4	4.4	3.2	2.8	2.4	2.1	2.1	2.6	2.7	3.1	3.18
2-3 p. m.	0.2	0.2	0.2	0.1	−0.3	−0.3	−0.2	−0.3	−0.3	−0.3	−0.2	−0.1	−0.11
4 p. m.	3.6	4.1	4.0	4.0	2.6	2.4	1.9	1.6	1.6	2.2	2.3	2.7	2.75
3-4 p. m.	−0.4	−0.3	−0.4	−0.4	−0.6	−0.4	−0.5	−0.5	−0.5	−0.4	−0.4	−0.4	−0.43
5 p. m.	2.7	3.3	3.2	3.1	1.9	1.7	1.3	1.2	1.1	1.5	1.5	1.9	2.03
4-5 p. m.	−0.9	−0.8	−0.8	−0.9	−0.7	−0.7	−0.6	−0.4	−0.5	−0.7	−0.8	−0.8	−0.72
6 p. m.	1.5	1.9	1.8	1.7	1.0	0.9	0.7	0.6	0.5	0.7	0.7	0.8	1.06
5-6 p. m.	−1.2	−1.4	−1.4	−1.4	−0.9	−0.8	−0.6	−0.6	−0.6	−0.3	−0.8	−1.1	−0.97
7 p. m.	0.4	0.7	0.7	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.28
6-7 p. m.	−1.1	−1.2	−1.1	−1.1	−0.7	−0.7	−0.6	−0.5	−0.4	−0.6	−0.7	−0.7	−0.78
8 p. m.	−0.2	−0.0	−0.1	−0.1	−0.2	−0.3	−0.2	−0.3	−0.2	−0.2	−0.4	−0.3	−0.21
7-8 p. m.	−0.6	−0.7	−0.8	−0.7	−0.5	−0.5	−0.3	−0.4	−0.3	−0.3	−0.4	−0.4	−0.49
9 p. m.	−0.6	−0.6	−0.7	−0.7	−0.7	−0.7	−0.6	−0.6	−0.6	−0.7	−0.7	−0.8	−0.67
8-9 p. m.	−0.4	−0.6	−0.6	−0.6	−0.5	−0.4	−0.4	−0.3	−0.4	−0.5	−1.1	−0.5	−0.46
10 p. m.	−1.0	−1.0	−1.1	−1.2	−1.1	−1.1	−1.0	−0.8	−0.8	−1.0	−1.0	−1.0	−1.61
9-10 p. m.	−0.4	−0.4	−0.4	−0.5	−0.4	−0.4	−0.4	−0.2	−0.2	−0.3	−0.3	−0.2	−0.34
11 p. m.	−1.3	−1.3	−1.5	−1.5	−1.5	−1.4	−1.2	−1.1	−1.0	−1.3	−1.3	−1.3	−1.31
10-11 p. m.	−0.3	−0.3	−0.4	−0.3	−0.4	−0.3	−0.2	−0.3	−0.2	−0.3	−0.3	−0.3	−0.30
12 midnight	−1.7	−1.7	−1.9	−2.0	−1.8	−1.7	−1.4	−1.3	−1.3	−1.5	−1.5	−1.5	−1.61
11-12 p. m.	−0.4	−0.4	−0.4	−0.5	−0.3	−0.3	−0.2	−0.2	−0.3	−0.2	−0.2	−0.2	−0.30

Concluding this branch of the subject Table 15 presents a summary of the most important data about the air temperature in Manila for periods of twenty and twenty-two years.

TABLE 15.—*Summary of the most important features of temperature in Manila.*

[° C.]

MONTH.	Mean derived from hourly observations (22 years).	Mean departures of the means (22 years).	Daily range of temperature.	HOURS OF MINIMUM AND MAXIMUM.		MEAN MONTHLY AND ANNUAL EXTREMES (20 YEARS).		Mean monthly and annual range.	ABSOLUTE EXTREMES (22 YEARS).	
				Max. (p. m.)	Min. (a. m.)	Max.	Min.		Maximum.	Minimum.
Jan	25.1	−1.8	7.6	3	6	32.1	17.9	14.2	33.9 (14, 1897)	15.6 (27, 1881)
Feb	25.6	−1.3	8.5	3	6	32.9	18.0	14.9	35.4 (24, 1892)	15.7 (27, 1902)
Mar	26.9	0.0	8.6	3	6	34.3	18.5	15.8	35.6 (28, 1901)	17.2 (2, 1899)
Apr	28.4	+1.5	8.9	3	6	35.5	20.8	14.7	37.2 (30, 1889)	18.7 (9, 1902)
May ...	28.8	+1.9	7.0	2	5	36.1	22.7	13.4	37.8 (23, 1889)	21.3 (4, 1901)
June ...	28.0	+1.1	6.0	2	5	35.0	22.6	12.4	36.8 (1, 1881)	21.1 (30, 1881)
July....	27.2	+0.3	5.0	1 2	5 6	33.5	22.4	11.1	35.2 (10, 1881)	21.0 (11, 1881)
Aug....	27.2	+0.3	4.8	1	6	33.0	22.3	10.7	35.2 (22, 1882; 6, 1900)	20.6 (27, 1896)
Sept....	27.1	+0.2	4.6	1	6	33.3	22.4	10.9	35.2 (29, 1901)	20.9 (22, 1902)
Oct.....	27.0	+0.1	5.6	1 2	6	33.3	21.4	11.9	34.9 (24, 1891)	19.6 (24, 1902)
Nov....	26.2	−0.7	5.7	1 2	6	32.2	20.3	11.9	34.2 (15, 1882)	17.3 (29, 1880)
Dec	25.2	−1.7	6.2	2	6	32.1	18.3	13.8	33.4 (3, 1900)	15.7 (31, 1892)
Year .	26.9	.....	6.5	.....	.....	33.6	20.6	13.0	[1] 37.8 May 23, 1889	[1] 15.6 Jan. 27, 1881

[1] These two values are the maximum and minimum during the period 1881–1902.

Plate I will illustrate the general movement of temperature during the year in Manila.

WATER VAPOR.

The other climatic element, as before stated, is the amount of aqueous vapor contained in the air. This is the cause of clouds and cloudiness, or rather, it is made visible by the clouds. It is also the real cause of the rain, and its amount constitutes the hygrometric condition of the atmosphere. We shall then treat here first, of clouds and cloudiness; second, of rainfall; third, of relative humidity; and finally refer briefly to the tension of the aqueous vapor in the air.

CLOUDS.

Cloudiness has a very close relation to temperature, and thus to climate, because of the direct influence it has upon thermic oscillation, upon the amount of radiation of heat, and also upon the hygrometric condition of the air; therefore it is closely related to that temperature which modern authors have called sensible temperature.[1]

The average cloudiness for each month in Manila as deduced from hourly observations for many years is as follows, the scale being 0 to 10, or from 0, clear sky, to 10, entirely covered:

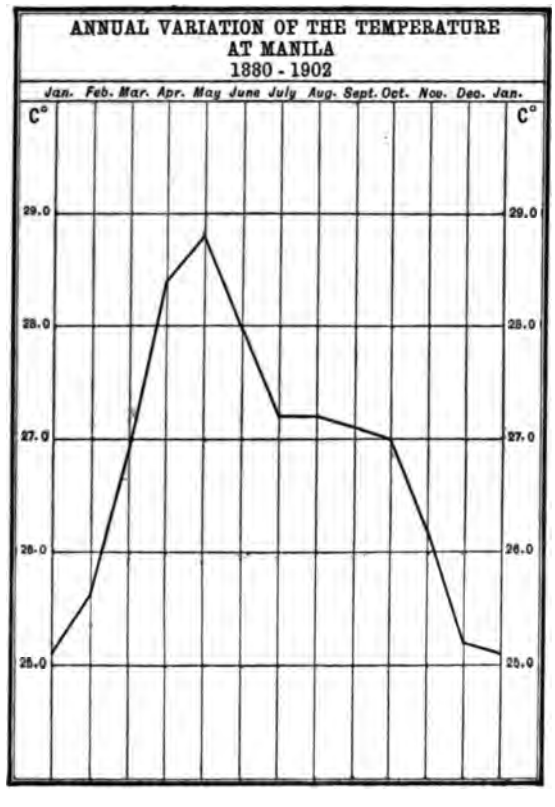
Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
4.6	3.8	3.8	3.5	5.1	6.8	7.5	7.5	7.4	6.1	5.8	5.6

The mean cloudiness for the year is 5.6.

We shall furthermore consider cloudiness in the different parts of the day so as to present the distribution of clouds throughout the

[1] "Handbook of Climatology" by Dr. Julius Hann, New York, 1903.

PLATE I.


ANNUAL VARIATION OF THE TEMPERATURE
AT MANILA
1880 - 1902
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan.
C°
C°
29.0
28.0
27.0
26.0
25.0

day in Manila. By dividing the day into four parts—early morning, forenoon, afternoon, and night—Table 16 shows the average cloudiness for each as the result of hourly observations made for many years. This table is based upon the classification of clear, covered, and variable, meaning cloudiness from 0 to 2, from 8 to 10, and from 3 to 8, respectively.

TABLE 16.—*Monthly variation of cloudiness, by divisions of the day.*

MONTH.	EARLY MORNING.			FORENOON.			AFTERNOON.			NIGHT.		
	Clear.	Covered.	Variable.	Clear.	Covered.	Variable.	Clear.	Covered.	Variable.	Clear.	Covered.	Variable.
January	11.7	7.3	12.0	5.7	7.7	17.6	4.9	11.3	14.8	12.3	6.0	12.7
February	13.8	5.0	9.3	10.2	6.5	11.5	8.0	7.4	12.8	16.1	6.3	7.8
March	14.7	7.1	9.2	10.0	8.4	12.6	9.5	7.7	13.8	17.8	4.9	8.3
April	17.8	4.0	8.2	11.3	4.7	14.0	7.8	6.2	16.0	17.3	4.7	8.0
May	6.9	8.8	15.3	4.1	9.6	17.3	2.0	14.5	14.5	6.6	11.3	13.1
June	3.9	10.8	15.3	2.3	11.8	15.9	0.7	15.5	13.8	2.9	12.4	14.7
July	2.8	13.2	15.0	1.5	13.7	15.8	0.6	20.0	10.4	2.2	17.4	11.4
August	2.1	15.9	13.0	1.4	15.3	14.3	0.3	18.8	11.9	1.1	18.0	11.9
September	2.2	16.3	11.5	1.2	14.8	14.0	0.4	18.2	11.4	2.0	18.0	10.0
October	6.5	12.7	11.8	6.0	13.3	11.7	2.3	17.0	11.7	6.1	12.6	12.3
November	7.6	10.4	12.0	5.1	10.5	14.4	3.1	13.2	13.7	10.0	11.5	8.5
December	9.2	9.5	12.3	4.0	11.8	15.2	2.5	14.0	14.5	13.0	8.1	9.9
Year	99.2	121.0	144.9	62.8	128.1	174.3	42.1	163.8	159.3	107.4	129.2	118.6

Table 16 contains some interesting facts of importance in climatology, which may be thus summarized:

1. The number of clear forenoons and clear early mornings reach a maximum in April, decreasing rapidly from April to August, and increasing from August to April, in almost regular progression.

2. The number of overcast afternoons is greatest from May to November because of the electric storms which usually develop in the afternoons during these months.

3. The clearest months of the year are March and April, due to the easterly prevailing currents, followed by February, January, and December.

4. Generally from May until October clear early mornings are more numerous than clear nights, and clear afternoons are fewer than clear nights and clear forenoons.

5. The minimum of clear days occurs in September and the maximum in April.

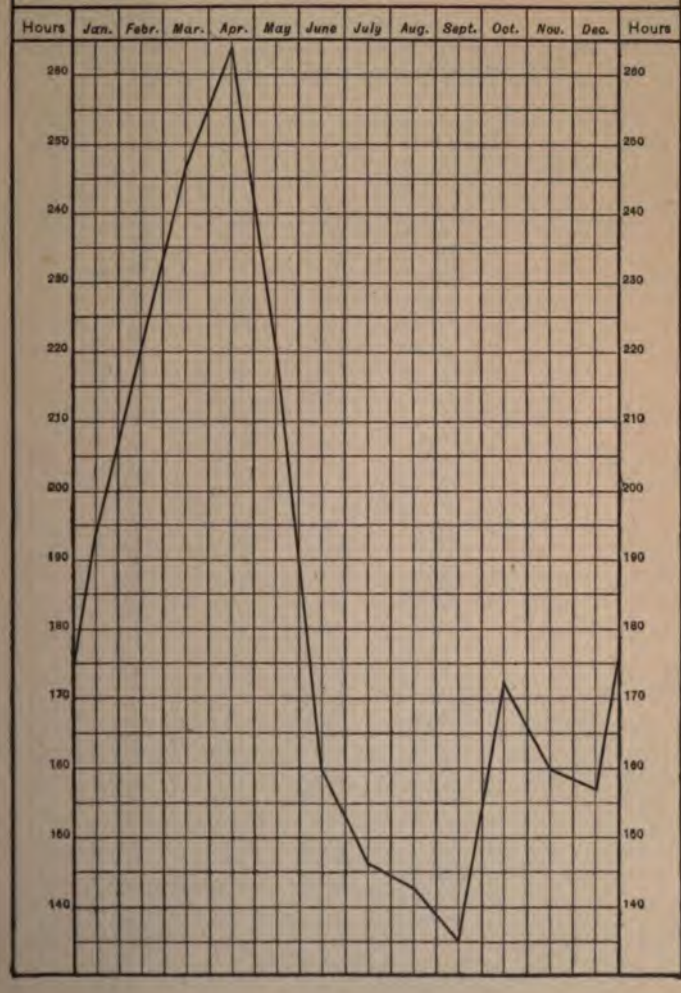
Other particulars about clouds and cloudiness in the Philippines may be seen in the volume published by the Manila observatory "Las nubes en el archipiélago Filipino," Manila, 1897.

Sunshine has a very close connection with the degree of cloudiness. Plate II shows the average number of hours of sunshine in Manila for each month, and its distribution almost agrees with that of the average clear and variable days, for each month, which is as follows:

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
Average clear and variable days	23.9	23.8	23.9	25.1	19.9	17.3	14.9	14.0	13.1	17.1	18.6	22.6

PLATE II.

ANNUAL VARIATION OF THE EFFICACY OF THE SUN'S RAYS AT MANILA



RAINFALL.

Rainfall, which is closely related to cloudiness, should be first c sidered by distribution over the archipelago, based upon observati made during the years 1902 and 1903 at the stations of the Philipp weather bureau, and then considered particularly with relation certain features of rainfall in Manila, where water precipitation been accurately recorded since the year 1865.

TABLE 17.—*Monthly and annual rainfall, in millimeters, at different stations of the ar pelago from September, 1902, to August, 1903.*

STATION.	September.	October.	November.	December.	January.	Febru
Masinloc	1,239.8	52.8	218.4	0.0	0.0	
Boroñgan	79.2	399.0	355.8	390.1	623.1	
Caraga	26.7	18.4	421.4	586.4	354.8	
Baler	248.7	304.5	406.4	382.0	273.3	
Baguió	602.7	212.1	75.9	24.1	5.1	
Cápiz	140.1	336.2	70.9	114.3	90.3	
Olongapó	869.0	30.5	143.5	2.8	0.0	
Tagbilaran	472.3	114.2	255.1	207.1	164.3	
Vigan	843.3	0.0	0.0	3.8	0.0	
Atimonan	317.4	591.5	235.9	63.2	165.9	
Dagupan	379.2	83.1	37.3	2.0	4.3	
Bolinao	402.8	9.4	38.1	2.5	0.0	
Legaspi	230.4	336.5	173.2	289.0	128.4	
Iloílo	511.9	219.5	28.7 (24 days)	126.7	5.5	
Balañga	772.0	132.6	116.9	15.1	12.9	
San Fernando (La Unión)	439.4	1.8	5.8	5.1	0.3	
Surigao	46.7	174.0	292.1	190.0	243.6	
Candón	592.3	21.1 (18 days)	50.8	0.0	0.0	
Pórac	539.2	100.1	100.6	42.2	26.2	
Aparrí	594.4	118.9	161.0	198.1	65.5	
Dapitan	132.8	364.0	291.3	183.4	140.2	
Ormoc	266.2	236.2	114.3	81.8	238.2	
Marilao	396.5	144.8	89.9	89.0	7.6	
Corregidor	868.2	29.7	34.0	10.9	7.6	
Cottabato	249.2	159.5	81.3	109.2	0.0 (20 days)	
Tárlac	373.8	141.6	55.6	17.0	9.4	
Joló	101.1	148.0	120.4	173.6	3.0	
San Isidro	423.3 (24 days)	37.8	143.3	51.9	21.4	
Manila	523.3	69.6	71.1	57.6	25.3	
Dávao	50.7	118.4	62.7	112.0	22.1	
Cuyo	276.9	83.8	14.6	66.8	0.0	
San José de Buenavista	338.1	72.1	22.0	10.2	18.7	
Cavite	529.9	103.5	77.8	36.3	17.6	
Isabela de Basilan	140.5	65.3	47.2	53.1	15.7	
Tuburan	71.9	170.0	191.5	52.7	96.0	
Nueva Cáceres	127.2	225.0	63.0	51.0	18.1	
Maasin	114.2	124.2	108.9	87.8	115.0	
Cebú	52.3	106.7	120.4	58.4	72.5	
Aráyat	292.1 (25 days)	25.1	6.6	20.1	20.8	
Zamboanga	91.9	39.4	18.7	21.1 (27 days)	15.0	
Santo Domingo, or Basco	.....	.....	.....	337.9	270.1	
Tuguegarao	.....	.....	36.1	.....	13.7	
Biñan	.....	.....	.....	.....	5.1	
Iba	1,200.6	49.3	87.6	7.6	0.0	
Dáet	317.5 (1903)	179.6	243.8	181.6	134.1	
Romblón	.....	.....	157.2	90.4	137.4	
Calbáyog	.....	.....	96.7	137.7	92.2	
Palánoc	.....	.....	.....	.....	.....	
Bacólod	202.1	406.1	10.8	.....	51.3	
Loón	.....	.....	.....	127.5	100.5 (22 days)	
Catbalogan	.....	.....	87.6	79.8	153.7	
Balingasag	236.9	80.5	79.7	35.6	19.8	

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3,165.2
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2,066.3
2,019.7
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1,925.0
1,908.1
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1,633.8
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Baguió
Cápiz .
Olonga
Tagbila
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Atimon
Dagupa
Bolinao
Legaspi
Ilofilo ..
Balañga
San Fer
Surigao
Candón
Pórac ..
Aparrí .
Dapitan
Ormoc .
Marilao
Corregi
Cottaba
Tárlac .
Joló ....
San Isid
Manila .
Dávao ..
Cuyo ...
San José
Cavite .
Isabela
Tuburan
Nueva C
Maasin .
Cebú ...
Aráyat .
Zamboa
Santo D
Tuguega
Biñan ..
Iba .....
Dáet ...
Romblón
Calbáyog
Palánoc .
Bacólod .
Loón ....
Catbalog
Balingas

TABLE 17.—*Monthly and annual rainfall, in millimeters, at different stations of the archipelago from September, 1902, to August, 1903*—Continued.

STATION.	March.	April.	May.	June.	July.	August.	Annual.
Masinloc	0.0	24.6	176.8	341.1 (20 days)	903.9	905.5	3,862.9
Borotíñan	109.5	135.4	325.6	295.1	265.4	75.2	3,452.7
Caraga	233.4	117.4	301.5	108.2	225.3	64.3 (1902)	3,165.2
Baler	53.3	239.0	389.9	290.8	249.4	53.3	3,008.4
Baguió	16.5	97.0	131.8	168.4	760.8	767.9	2,862.3
Cápiz	7.4	16.3	127.0	590.8	936.5	241.8	2,788.7
Olongapó	0.0	0.0	49.0	128.8	618.2	474.7	2,317.8
Tagbilaran	35.8	17.7	161.5	183.1	395.3	188.2	2,286.0
Vigan	16.3	11.4	45.0	177.0	456.9	654.2 (1902)	2,207.9
Atimonan	24.6	15.5	61.5	77.9	320.8	232.7	2,197.3
Dagupan	1.3	54.9	214.4	271.5	664.2	351.3	2,066.3
Bolinao	5.1	5.3	100.6	122.4	726.2	599.7	2,019.7
Legaspi	95.9	116.9	81.4	99.0	194.0	80.3	1,955.0
Iloilo	3.3	4.8	165.6	244.3	427.0	186.2	1,925.0
Balañga	0.0	6.1	168.2	96.3	418.1	139.7	1,908.1
San Fernando (La Unión)	0.0	12.2	53.6	115.8	511.5	724.2	1,869.7
Surigao	135.9	118.1	238.0	102.9	135.1	4.3	1,781.5
Candón	0.0	33.3	5.3	147.0	586.7	344.4	1,780.9
Pórac	0.0	48.8	40.6	163.3	424.4	272.5	1,757.9
Aparrí	0.0	30.0	79.5	11.7	49.0	324.1	1,717.8
Dapitan	6.9	58.4	71.9	139.7	156.5	95.0	1,700.6
Ormoc	36.8 (22 days)	40.6	47.5	101.9	381.0	99.6	1,699.5
Marilao	0.5	37.3	27.6	160.8	461.0	281.8	1,699.3
Corregidor	0.0	0.0	18.8	110.7	345.2	241.6	1,673.1
Cottabato	68.1 (24 days)	72.9	212.8	157.7	250.0	187.2	1,633.8
Tárlac	0.0	46.7	81.3	146.3	428.7	155.7	1,480.5
Joló	32.5	105.0	65.7	214.4	292.0	157.6	1,436.4
San Isidro	0.0	1.3	38.1	116.0	386.4	134.9	1,354.4
Manila	0.0	13.1	15.1	100.2	267.2	180.9	1,332.3
Dávao	18.7	181.8	127.6	111.2	224.3	121.0	1,310.2
Cuyo	0.0	1.8	88.1	139.8	442.8	179.3	1,293.9
San José de Buenavista	0.0	87.9	56.6	215.9	343.7	93.7	1,258.9
Cavite	2.9	5.0	18.4	56.2	195.9	54.2	1,102.6
Isabela de Basilan	0.0	22.5	108.5	307.6	131.1	201.9	1,100.5
Tuburan	22.3	0.0	81.3	118.5	166.0	60.6	1,049.1
Nueva Cáceres	4.0	9.8	66.8	175.5	217.2	69.5	1,047.0
Maasin	32.1	10.7	77.3	109.6	69.9	64.4	976.2
Cebú	30.9	7.9	34.5	200.9	133.9	74.2	916.6
Arásyat	0.0	15.5	8.1	30.0	142.5	199.4	761.7
Zamboanga	0.0	7.0	41.5	66.1	55.8	48.6	413.4
Santo Domingo, or Basco	51.8	141.0	201.1	163.7	340.6	910.7	.....
Tuguegarao	0.0	48.3	119.4	118.4	98.6	80.2	.....
Biñan	0.0	5.8	15.0	30.7	280.2	125.2	.....
Iba	0.0	8.4	72.6	225.3	.....	.....	.....
Díet	29.2	40.1	20.1	60.5	102.6	49.5	1,474.2
Romblón	1.3	29.0	114.6	101.3	70.1	.....	.....
Calbáyog	47.8	82.0	167.1	140.5	168.4	97.8	.....
Palánoc	.....	.....	.....	113.0	119.1	88.1	.....
Bacólod	6.3	2.8	91.3	178.1	334.6	200.2	.....
León	9.7	42.2	16.9	88.3	.....	.....	.....
Catbalogan	19.5	10.7 (22 days)	114.3 (14 days)	43.2	202.7	101.6	.....
Balingasag	3.3	7.6	.....	.....	298.4	210.3	.....

The preceding table shows that the distribution of rainfall over the archipelago differs widely, according to locality. As far as the distribution of precipitation is concerned, the archipelago may be divided into two zones:

Zones of rainy and dry season:

Western coast of Luzón from Santiago Point to Cape Bojeador, including Manila bay.

Interior of Luzón from Laguna de Bay to South Cagayán valley, and in the highlands above 3,000 feet.

Western coast of Mindoro.

Zones of rainy and dry season—Continued.

Western coast of Panay.
Calamianes group.
Islands in the North Joló sea.
Palawan or Paragua Island.

In these zones the rain is very abundant (from 2,000 to 4,000 mm.) in:

Zambales.
Highland of Luzón above 4,000 feet.
Ilocos Norte and Ilocos Sur.
La Unión province.
The Lingayén gulf.

While the rain is moderate (below 2,000 mm.) in:

The Manila bay.
The interior of Luzón below 4,000 feet.
The western coast of Panay.
The western coast of Mindoro.
The North Joló sea.
Paragua Island.
West coast of Luzón south of Corregidor Island.

Zones of more even distribution of rain:

Southeast end of Luzón.
Eastern coast of Luzón.
Eastern Visayas (Sámar, Leyte, Cebú, Bohol, and adjacent islands).
Eastern Mindoro.
Northern and eastern Panay.
Joló archipelago.
Mindanao, Dinágat, and Camiguín.
Batán and Babuyán islands.
Northern Luzón.

In these zones the rain is very abundant in:

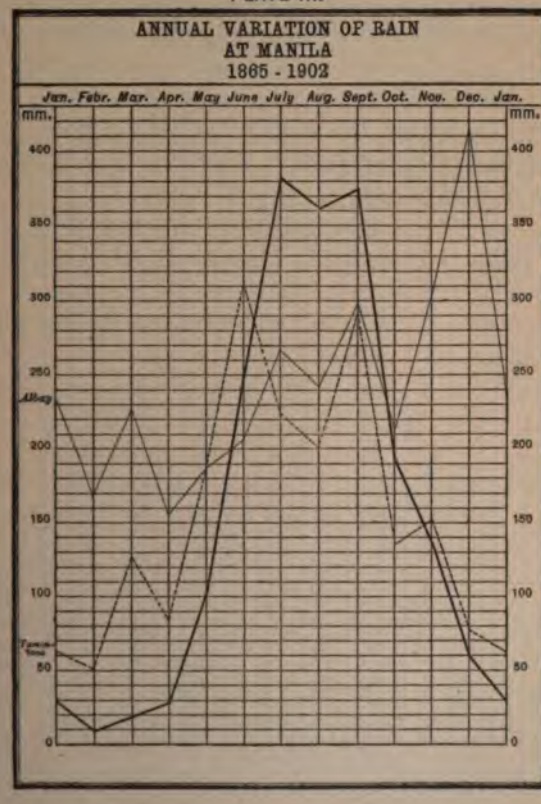
Eastern Luzón, from Atimonan to Cape Engaño.
Eastern Mindanao.
Northern Panay.
Extreme southeast of Luzón.
Eastern Sámar.
Eastern Leyte, south of Tacloban.
Bohol.

The rain is moderate in:

North Mindanao.
West, south, and the interior of Mindanao.
Joló archipelago.
Cebú.
Western coast of Sámar.
Western coast of Leyte.

Tables 25, 26, and 27 may explain also this division.

PLATE III.


ANNUAL VARIATION OF RAIN
AT MANILA
1865 - 1902
Jan. Febr. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan.
mm.
400
350
300
250
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On Plate III we give an illustration of the annual variation of rain in Manila compared with the variation in Albay and Tamontaca, where the rainfall is more evenly distributed and very abundant, as in Albay, and moderate, as in Tamontaca (Mindanao).

In Table 18 will be found the amount of rainfall in Manila for each month since the year 1865, or in a period of thirty-eight years. Attention is called to the fact that, except during the years 1874, 1885, and 1892, the driest of the whole period, and the years 1867, 1869, and 1899, the wettest, the total quantity of the others is not very far from the general mean, 1,938 mm. The same may be deduced from Table 19, in which we give the days of rainfall in Manila for the period mentioned.

In Table 20 is presented the amount of rain for the dry and wet seasons. The result may be taken as a type for the regions similarly affected and mentioned above.

Table 21 gives the extreme values concerning the rainfall in Manila. Other features about the rainfall in Manila will be shown in Tables 22, 23, and 24.

A graphic representation of the total rainfall in Manila for each year since 1865 will be found on Plate IV.

TABLE 18.—*Quantity of water collected by the pluviometers of Manila observatory: 1865–1902.*

[Millimeters.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1865	11.0	38.0	0.0	0.0	90.6	266.2	249.0	219.0	687.9	266.4	95.0	19.5	1,942.6
1866	44.0	0.0	60.0	20.0	106.4	355.0	134.0	302.7	362.5	403.9	137.5	131.0	2,057.0
1867	21.5	18.2	12.8	21.5	169.0	206.0	357.8	340.2	1,469.7	280.1	69.0	13.0	2,978.8
1868	9.0	0.0	0.0	0.0	75.0	393.7	286.0	286.5	462.0	162.4	267.3	2.3	1,943.9
1869	35.5	11.1	0.0	40.8	129.2	276.9	368.8	407.8	446.2	589.7	200.8	42.0	2,548.8
1870	82.6	24.6	3.4	21.0	194.1	199.2	390.1	423.3	278.7	133.8	210.8	46.1	2,002.7
1871	9.6	6.7	11.2	0.0	12.6	375.7	269.6	248.9	351.3	189.1	141.4	7.9	1,624.0
1872	15.3	10.0	28.2	39.8	89.4	168.6	206.6	798.8	257.4	198.0	133.4	32.0	1,977.5
1873	20.0	12.8	14.0	100.9	59.0	354.3	261.7	388.3	146.1	317.8	37.9	1.0	1,713.8
1874	13.9	5.0	2.2	17.7	37.2	110.3	284.4	422.0	115.6	138.2	45.5	15.0	1,207.0
1875	99.2	28.3	24.2	2.3	0.0	49.4	330.2	400.7	486.9	134.2	98.6	32.9	1,686.9
1876	28.4	3.6	9.4	29.8	185.7	222.1	470.1	339.6	520.3	58.2	61.5	61.5	1,990.2
1877	2.8	0.2	0.2	0.0	200.4	233.9	602.0	1,095.6	93.6	239.4	50.1	6.8	2,525.0
1878	1.5	7.5	10.8	5.5	76.2	207.2	239.1	220.5	399.6	99.6	122.4	89.6	1,479.5
1879	55.2	39 6	11.3	119.8	103.9	96.5	143.4	290.7	316.4	147.3	397.8	5.0	1,726.9
1880	42.3	11.6	15.6	136.4	21.0	205.5	809 8	499.8	349.6	172.8	105.7	36.4	2,406.5
1881	4.1	0.0	9.2	7.1	174.2	433.0	486.7	440.7	255.7	155.5	64.9	91.2	2,122.3
1882	9.5	28.0	30.7	40.8	131.9	235.1	573.6	306.3	327.5	320.3	177.4	104.9	2,286.0
1883	195.2	15.4	23.0	75.3	123.7	212.9	754.6	256.5	353.4	162.0	72.5	3.2	2,247.7
1884	0.5	0.4	5.5	0.0	96.4	297.8	721.0	327.5	194.2	47.5	149.1	61.7	1,901.6
1885	2.0	0.0	3.0	22.8	1.2	169.5	313.9	170.7	50.8	111.6	57.5	3.5	906.5
1886	3.0	16.5	0.0	31.4	107.1	219.9	225.9	248.4	233.1	363.5	63.5	89.3	1,601.6
1887	13.4	4.8	100.2	27.2	256.9	135.7	378.7	142.8	738.0	210.9	141.9	117.2	2,267.7
1888	16.0	0.0	18.8	14.3	28.2	265.4	680.6	355.2	138.1	200.2	53.4	36.9	1,807.1
1889	98.1	10.8	4.8	3.5	0.0	167.7	292.9	339.0	117.5	198.8	152.6	346.9	1,732.6
1890	14.1	15.6	16.4	77.3	69.6	255.5	498.8	130.8	536.7	224.9	209.9	45.4	2,095.0
1891	18.7	1.8	4.1	4.0	97.7	655.5	642.7	276.1	477.8	39.5	306.6	59.2	2,583.7
1892	43.7	17.1	27.1	13.8	76.2	114.2	231.0	151.0	377.2	77.7	100.7	52.9	1,282.6
1893	14.2	5.7	18.0	20.8	184.5	24.8	234.2	276.8	475.1	83.8	94.2	9.3	1,441.4
1894	10.0	3.3	61.9	22.1	108.1	281.3	209.9	189.5	399.2	224.6	59.9	108.6	1,678.4
1895	26.7	1.6	11.4	5.6	246.8	539.5	178.6	349.4	463.8	78.3	167.6	15.4	2,084.7
1896	1.0	7.6	10.6	4.9	168.8	156.6	221.8	650.2	424.6	109.2	29.8	0.2	1,785.3
1897	12.3	0.0	22.4	25.6	36.3	96.0	245.7	263.6	263.2	121.7	73.9	142.8	1,303.5
1898	54.2	10.3	65.6	35.5	167.1	329.6	288.1	414.3	325.1	245.2	277.6	14.1	2,226.7
1899	42.4	3.0	29.9	70.4	65.3	217.3	1,190.9	340.1	385.0	79.8	227.1	143.1	2,794.3
1900	3.2	3.5	15.4	2.2	49.2	415.0	186.9	770.9	288.0	175.9	148.8	65.7	2,125.7
1901	0.1	9.7	16.1	12.2	71.6	155.2	228.6	341.5	151.6	457.3	310.8	97.0	1,851.7
1902	27.2	1.0	7.6	7.2	51.4	311.3	289.2	300.2	523.3	69.6	71.1	57.6	1,716.7
Average.	29.0	9.8	18.6	28.4	101.6	247.6	381.0	361.2	374.7	191.8	136.5	58.1	1,938.3

PLATE IV.

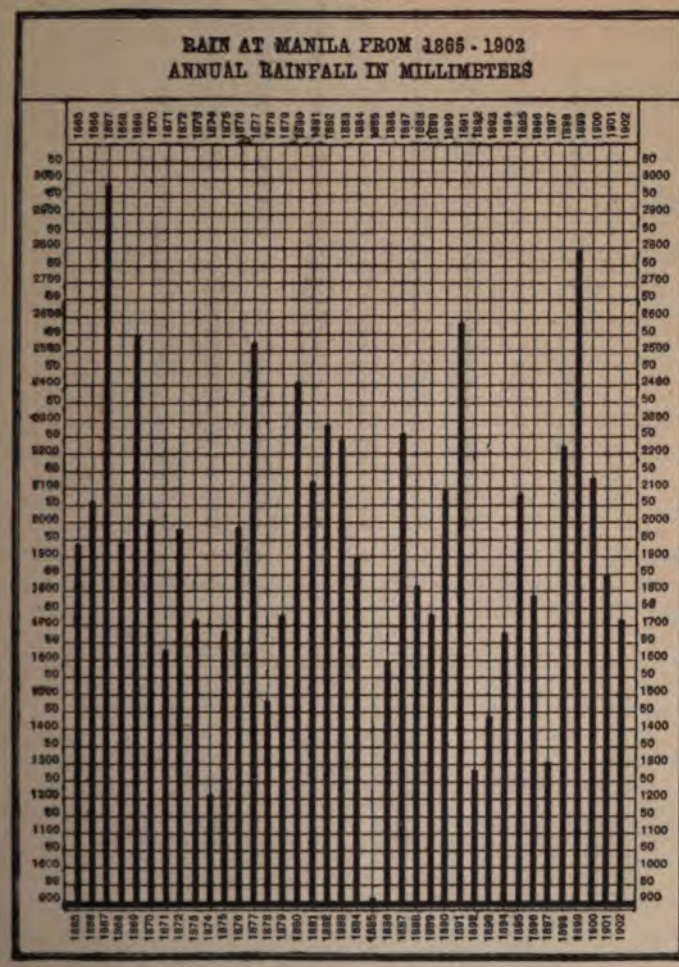

RAIN AT MANILA FROM 1865 - 1902
ANNUAL RAINFALL IN MILLIMETERS

Table 19.—*Days of rain in Manila: 1866–1902.*

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1866	5	0	1	1	9	15	16	18	22	23	10	14	134
1867	6	2	4	2	10	9	14	23	26	15	10	4	125
1868	4	0	0	0	5	19	20	17	20	15	8	1	109
1869	1	2	0	2	11	14	19	16	15	20	8	8	116
1870	11	7	1	5	11	14	19	21	20	13	15	4	141
1871	4	3	1	0	4	18	15	16	18	13	11	5	108
1872	7	10	3	4	9	17	13	19	17	18	15	5	137
1873	8	4	2	9	2	16	20	23	15	17	5	3	124
1874	4	3	1	4	5	13	16	21	10	13	7	4	101
1875	8	7	4	1	0	6	21	23	26	21	15	7	139
1876	5	2	3	5	17	19	27	25	22	10	8	11	154
1877	6	1	2	0	10	19	24	26	13	20	14	5	140
1878	4	3	3	4	8	15	23	16	21	13	17	14	141
1879	10	5	3	9	6	13	12	18	18	14	19	3	130
1880	7	2	6	6	7	19	23	18	20	15	8	11	142
1881	6	0	5	1	4	13	30	17	18	12	14	8	128
1882	2	5	6	4	7	15	26	15	22	19	10	13	144
1883	6	5	3	9	10	19	19	18	27	16	10	1	142
1884	1	1	1	0	10	21	27	22	20	15	12	12	142
1885	1	0	1	4	1	11	17	17	11	14	10	2	89
1886	3	2	0	3	10	18	20	19	21	21	16	12	145
1887	5	3	7	3	20	19	22	19	29	12	13	14	166
1888	1	0	4	2	8	19	29	19	14	15	13	6	130
1889	9	1	2	2	0	13	20	25	22	18	13	13	138
1890	7	5	2	7	13	16	17	13	25	21	7	7	140
1891	7	2	3	1	5	18	23	26	15	9	12	13	134
1892	6	2	5	6	9	17	25	20	22	11	14	9	146
1893	3	3	2	5	16	14	17	22	26	15	11	8	142
1894	4	2	2	2	14	18	21	22	20	15	14	8	142
1895	5	2	4	2	19	14	22	22	23	13	10	8	144
1896	2	2	3	2	17	12	19	28	22	15	4	2	128
1897	3	0	2	5	10	11	18	23	24	22	10	17	145
1898	9	5	13	11	13	22	26	22	22	24	22	9	198
1899	9	2	10	9	14	20	25	25	16	15	15	11	171
1900	2	3	3	2	5	16	23	26	21	17	15	11	144
1901	1	3	2	3	11	18	21	29	17	17	21	9	152
1902	9	3	2	6	13	19	24	26	22	9	8	8	149
Average	5	3	3	4	9	16	21	21	20	16	12	8	138

TABLE 20.—*Rainfall and days of rain in the dry and rainy season in Manila: 1865–1902.*

YEAR.	DRY SEASON.				RAINY SEASON.			
	Amount of rain.		Days of rain.		Amount of rain.		Days of rain.	
	Millimeters.	Per cent.	Number.	Per cent.	Millimeters.	Per cent.	Number.	Per cent.
1865	254.1	13	.....	.....	1,688.5	87	.....	.....
1866	498.9	24	40	30	1,558.1	76	94	70
1867	325.0	11	38	30	2,653.8	89	87	70
1868	358.3	18	18	17	1,590.6	82	91	83
1869	459.4	18	32	28	2,089.4	82	84	72
1870	582.6	29	54	38	1,420.1	71	87	62
1871	189.4	12	28	26	1,434.6	88	80	74
1872	348.1	18	53	39	1,629.4	82	84	61
1873	245.6	14	33	27	1,468.2	86	91	73
1874	136.5	11	28	28	1,070.5	89	73	72
1875	285.5	17	42	30	1,401.4	83	97	70
1876	379.9	19	51	33	1,610.3	81	108	67
1877	260.5	10	38	27	2,264.5	90	102	73
1878	313.5	21	53	38	1,166.0	79	88	62
1879	732.6	42	55	42	994.3	58	75	58
1880	369.0	15	47	33	2,037.5	85	95	67
1881	350.7	17	38	30	1,771.6	83	90	70
1882	523.2	23	47	33	1,762.8	77	97	67
1883	508.3	23	43	30	1,739.4	77	99	70
1884	313.6	16	37	26	1,588.0	84	105	74
1885	90.0	10	19	21	816.5	90	70	79
1886	310.8	19	46	32	1,290.8	81	98	68
1887	661.6	29	65	39	1,606.1	71	101	61
1888	167.6	9	34	26	1,639.5	91	96	74
1889	616.7	36	40	29	1,115.9	64	99	71
1890	448.3	21	48	34	1,646.7	79	92	66
1891	492.1	19	43	32	2,091.6	81	91	68
1892	331.5	26	51	35	951.1	74	95	65
1893	346.7	24	48	34	1,094.7	76	94	66
1894	373.9	22	46	32	1,304.5	78	96	68
1895	475.1	23	50	35	1,609.6	77	94	65
1896	222.9	12	32	25	1,562.4	88	96	75
1897	313.3	24	47	32	990.2	76	98	68
1898	624.4	28	82	41	1,602.3	72	116	59
1899	581.2	21	70	41	2,213.1	79	101	59
1900	289.0	14	41	29	1,836.7	86	103	71
1901	517.5	28	50	33	1,334.2	72	102	67
1902	223.1	13	49	33	1,493.6	87	100	67
Average	382.0	20	44	32	1,556.3	80	94	68

TABLE 21.—*Extremes of rain in Manila: 1865–1902.*

[Millimeters.]

MONTH.	EXTREMES OF RAINFALL.				EXTREMES OF DAYS OF RAIN.			
	Normal.	Absolute maximum.	Absolute minimum.	Difference.	Normal.	Absolute maximum.	Absolute minimum.	Difference.
January	29.0	195.2 (1883)	0.1 (1901)	195.1	5	11 (1870)	1 {1869, 1884, 1885, 1888, 1901}	10
February	9.8	39.6 (1879)	0.0 {1866, 1868, 1881, 1885, 1888, 1897}	39.6	3	10 (1872)	0 {1866, 1868, 1881, 1885, 1888, 1897}	10
March	18.6	100.2 (1887)	0.0 {1865, 1868, 1869, 1886}	100.2	3	13 (1898)	0 {1865, 1868, 1869, 1886}	13
April	28.4	136.4 (1880)	0.0 {1865, 1868, 1871, 1884}	136.4	4	11 (1898)	0 {1865, 1868, 1871, 1884}	11
May	101.6	256.9 (1887)	0.0 {1875, 1889}	256.9	9	20 (1887)	0 {1875, 1889}	20
June	247.6	655.5 (1891)	24.8 (1893)	630.7	16	22 (1898)	6 (1875)	16
July	381.0	1,190.9 (1899)	134.0 (1866)	1,056.9	21	30 (1881)	12 (1879)	18
August	361.2	1,095.6 (1877)	130.8 (1890)	964.8	21	29 (1901)	13 (1890)	16
September	374.7	1,469.7 (1867)	50.8 (1885)	1,418.9	20	29 (1887)	10 (1874)	19
October	191.8	589.7 (1869)	39.5 (1891)	550.2	16	24 (1898)	9 {1891, 1902}	15
November	136.5	397.8 (1879)	29.8 (1896)	368.0	12	22 (1898)	4 (1896)	18
December	58.1	346.9 (1889)	0.2 (1896)	346.7	8	17 (1897)	1 {1868, 1883}	16

TABLE 22.—*Maximum daily rainfall in Manila: 1865–1902.*

YEAR.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Mm.	Date.	Mm.	Date.	Mm.	Date.	Mm.	Date.	Mm.	Date.	Mm.	Date.
1865	6.0	.....	38.0	.....	0.0	0	0.0	0	28.0	.....	69.0	.....
1866	12.0	12	0.0	0	60.0	18	20.0	24	55.0	9	92.0	24
1867	13.0	22	14.0	27	7.2	30	19.0	11	39.0	30	63.0	26
1868	3.0	25	0.0	0	0.0	0	0.0	0	36.0	17	80.5	18
1869	35.5	6	8.1	20	0.0	0	30.0	26	30.8	8	102.8	23
1870	30.0	25	13.0	9	3.4	4	13.2	23	101.8	12	42.4	11
1871	4.4	9	2.5	15	11.2	9	0.0	0	3.6	22	80.1	24
1872	8.0	24	4.0	12	17.5	27	15.2	2	32.0	22	32.2	13
1873	9.2	9	4.5	23	10.0	31	43.8	13	51.0	29	74.3	25
1874	11.7	8	4.3	14	2.2	13	12.2	28	12.0	27	31.1	22
1875	27.1	4	14.1	18	8.1	31	2.3	3	0.0	0	17.7	24
1876	12.6	10	3.1	12	7.3	28	12.9	14	30.1	21	28.8	9
1877	1.9	30	0.2	26	0.1	{2, 5}	0.0	0	53.6	28	111.4	21
1878	0.8	13	4.6	7	5.8	2	4.3	5	45.0	20	44.2	29
1879	15.3	11	34.9	2	5.6	9	30.0	{16, 24}	51.5	31	30.4	1
1880	20.3	5	11.1	24	7.5	22	42.0	25	11.1	22	39.4	3
1881	1.6	13	0.0	0	3.8	21	7.1	25	166.8	24	139.3	29
1882	5.9	1	15.0	1	15.0	14	19.8	10	56.0	5	67.3	29
1883	186.1	1	9.7	11	20.0	29	24.0	25	29.5	26	88.0	3
1884	0.5	29	0.4	16	5.5	9	0.0	0	21.2	25	41.0	15
1885	2.0	9	0.0	0	3.0	17	18.0	22	1.2	4	52.8	29
1886	1.5	16	14.0	11	0.0	0	29.4	29	32.5	13	45.4	16
1887	5.2	16	2.8	12	24.2	6	10.8	3	45.6	25	26.2	21
1888	16.0	24	0.0	0	10.8	29	14.0	20	7.5	18	50.4	17
1889	51.0	29	10.8	19	3.0	1	2.5	23	0.0	0	49.4	30
1890	5.0	25	10.5	7	15.4	12	18.8	5	12.4	25	34.1	15
1891	9.5	14	1.1	8	3.3	10	4.0	29	56.2	29	252.7	15
1892	39.1	21	17.0	29	12.2	23	5.9	4	64.0	21	18.1	11
1893	7.1	8	2.5	11	13.3	1	13.0	14	62.5	16	6.1	21
1894	6.8	1	2.5	5	52.5	9	21.7	30	28.0	25	93.6	28
1895	19.7	3	1.4	7	9.6	8	4.0	29	71.3	13	143.4	24
1896	0.6	1	5.6	13	8.0	2	4.2	27	36.4	17	58.3	6
1897	7.1	22	0.0	0	22.2	16	10.7	30	11.5	28	33.0	16
1898	21.2	2	4.2	24	24.4	11	15.0	13	49.9	31	80.1	16
1899	22.4	15	1.5	{12, 13}	7.5	15	25.7	30	12.2	16	105.2	28
1900	2.0	18	2.0	8	9.4	13	2.0	27	30.0	22	107.0	27
1901	0.1	30	4.8	5	12.5	31	9.0	28	27.0	16	38.1	13
1902	14.9	20	0.6	14	7.5	10	3.0	15	12.7	19	116.3	17

TABLE 22.—*Maximum daily rainfall in Manila: 1865–1902*—Continued.

YEAR.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.	
	Mm.	Date.	Mm.	Date.	Mm.	Date.	Mm.	Date.	Mm.	Date.	Mm.	Date.
1865	44.5	.....	36.0	.....	114.0	.....	94.0	3	37.5	9	8.5	16
1866	21.5	21	79.0	28	55.0	18	61.0	19	55.0	30	65.5	14
1867	145.0	12	59.0	2	336.0	24	172.0	7	24.0	16	5.0	7
1868	50.0	17	40.0	30	82.0	9	32.5	16	139.1	22	2.0	21
1869	101.8	19	107.6	2	128.0	26	94.8	1	86.0	21	10.0	17, 24
1870	71.0	9	72.6	21	46.9	13	29.7	27	40.0	5	25.2	9
1871	45.0	23	76.0	3	56.7	29	88.1	16	80.1	3	5.0	8
1872	67.3	22	226.5	2	42.0	3	87.5	13	52.7	5	20.0	10
1873	48.7	8	69.6	31	23.8	17	85.0	1	14.7	2	0.5	25
1874	63.8	3	124.8	30	37.2	28	26.1	2	18.5	1	5.0	9, 12
1875	79.8	12	69.1	22	60.4	28	27.1	27	15.6	20	13.2	3
1876	104.5	17	95.5	8	117.8	13	13.2	17	25.2	4	32.6	18
1877	91.2	13	192.7	15	32.2	15	60.0	14	19.1	5	2.2	3
1878	128.8	30	84.0	17	74.2	23	23.3	30	21.0	23	26.0	23
1879	59.2	31	49.3	27	162.3	20	74.8	8	102.6	20	2.6	15
1880	290.1	30	111.6	4	213.1	15	48.0	12	68.8	8	8.5	2
1881	96.0	7	118.8	20	61.3	16	20.8	13	15.3	3	37.3	12
1882	176.8	28	86.4	8	50.5	22	165.2	20	67.2	5	26.2	19
1883	156.9	29	46.0	2, 18	5.0	5	34.5	30	14.7	18	3.2	12
1884	179.5	21	57.8	8	50.9	12	11.2	2	98.7	18	17.7	2
1885	74.3	24	41.0	11	11.4	5	24.0	6	18.9	7	3.0	3
1886	38.0	12	45.9	25	48.8	18	76.0	10	16.9	5	34.7	19
1887	115.7	21	41.6	17	164.8	19	118.6	5	64.2	26	35.4	5
1888	109.2	23	107.4	16	47.0	17	31.5	12	14.0	16	21.1	5
1889	95.5	15	63.0	6	40.2	10	76.0	19	63.3	3	90.0	1
1890	189.1	16	37.6	25	83.0	29	29.0	14	153.8	11	20.3	22
1891	139.4	26	89.6	22	115.8	15	15.5	9	180.6	16	16.8	4
1892	89.6	30	45.9	28	60.2	7	17.8	16	29.1	11	14.4	3
1893	53.8	17	58.5	28	77.0	6	28.8	11	34.6	20	2.1	21
1894	67.0	18	43.8	5	67.7	28	35.9	9	14.2	21	61.9	2
1895	34.5	26	62.2	25	115.6	2	21.3	7	39.6	6	5.1	24
1896	46.1	23	80.7	6	72.2	5	13.2	7	20.3	21	0.1	5, 15
1897	66.6	26	58.5	28	75.4	14	18.2	1	19.0	21	20.8	31
1898	30.0	18	78.6	8	87.2	16	54.4	13	76.8	12	5.7	23
1899	253.5	19	68.1	19	180.8	20	25.5	19	80.8	14	99.0	19
1900	54.7	30	96.8	14	76.9	8	35.4	5	23.2	16	29.3	11
1901	36.1	12	46.7	11	37.6	6	103.9	3	55.7	7	29.0	12
1902	80.7	10	37.1	1	123.2	22	26.8	6	57.3	8	26.0	28

TABLE 23.—*Causes and circumstances of the most abundant rainfalls which have occurred within one hour or part thereof: 1885–1902.*

YEAR.	Date.	Hour.	Amount of rain (mm.).	Cause of rain.	Observations.
1892	May 21	5–6 p. m.	60.0	Intense local thunderstorm	These 60 mm. were registered by the pluviograph Cassella in 30 minutes.
1891	June 15	7–8 a. m.	55.0	Influence of distant pressure.	In 8 minutes 50 mm. were collected.
1887	Sept. 18	6–7 p. m.	52.5	Intense thunderstorms	The pluviograph registered 40 mm. in 30 minutes.
1899	July 19	1–2 a. m.	51.3	Thunderstorm influenced by distant hurricane.	We found 20 mm. registered in 15 minutes.
1891	Sept. 15	5–6 p. m.	50.3	Influence of distant hurricane.	20 mm. were registered in 12 minutes.
1890	July 16	5–6 p. m.	50.0	Distant hurricane in the north.	
1891	Nov. 16	3–4 p. m.	49.8	Influence of a hurricane which crossed near the south of Manila.	
1902	June 1	4–5 p. m.	48.5	Thunderstorm influenced by a hurricane toward the east.	
1889	Aug. 6	2–3 p. m.	48.0	Thunderstorm	In 7 minutes 50 mm. were registered.
1889	June 30	2–3 p. m.	47.2	.....do	In 20 minutes 30 mm. were registered.
1898	Sept. 14	1–2 a. m.	47.2	Distant pressure	In 17 minutes 25 mm. were registered in the pluviograph.
1886	Aug. 27	2–3 a. m.	47.0	.....do	
1888	Sept. 17	7–8 p. m.	47.0	Thunderstorm	45 mm. of water fell in 35 minutes.
1897	Aug. 28	3–4 p. m.	46.0	Intense local thunderstorm	40 mm. registered in 16 minutes.
1894	Mar. 9	0–1 p. m.	45.8	Thunderstorm	
1896	Sept. 6	1–2 a. m.	44.0	.....do	20 mm. collected in 15 minutes.
1888	July 23	4–5 a. m.	42.8	.....do	
1886	Aug. 26	5–6 p. m.	42.0	.....do	15 mm. registered in 15 minutes.
1891	May 29	7–8 p. m.	42.0	.....do	20 mm. registered in 10 minutes.

TABLE 24.—*Maximum rainfall in each month, observed in Manila during the period 1885–1902.*

YEAR.	JANUARY.			FEBRUARY.			MARCH.		
	Mm.	Date.	Hour.	Mm.	Date.	Hour.	Mm.	Date.	Hour.
1885	1.0	9	2-3 p.m. 3-4 p.m.	0.0	0	0	3.0	17	4-5 p.m.
1886	1.5	16	0-1 p.m.	5.5	11	8-9 p.m.	0.0	0	0
1887	5.0	16	2-3 p.m.	2.8	12	0-1 p.m.	12.4	31	0-1 a.m.
1888	11.5	24	2-3 p.m.	0.0	0	0	10.8	29	2-3 p.m.
1889	36.0	29	2-3 p.m.	10.7	19	2-3 p.m.	2.5	10	2-3 p.m.
1890	4.2	13	0-1 p.m.	3.0	7	8-9 p.m.	15.4	12	10-11 p.m.
1891	9.5	14	2-3 p.m.	1.1	8	1-2 p.m.	3.3	10	0-1 a.m.
1892	8.4	21	3-4 a.m.	8.2	29	6-7 p.m.	8.5	23	5-6 p.m.
1893	3.0	8	10-11 p.m.	2.5	12	11-12 noon	8.0	10	3-4 p.m.
1894	0.9	4	1-2 p.m.	0.8	20	0-1 p.m.	45.8	9	0-1 p.m.
1895	14.5	3	5-6 p.m.	1.4	7	6-7 a.m.	9.6	8	3-4 p.m.
1896	0.4	1 2	2-3 a.m. 6-7 a.m.	5.6	13	3-4 p.m.	2.1	2	0-1 a.m.
1897	5.1	22	1-2 p.m.	0.0	0	0	9.5	16	5-6 p.m.
1898	17.4	2	[1]11-12	2.2	10	4-5 p.m.	6.1	15	3-4 p.m.
1899	7.6	15	3-4 a.m.	1.5	12	10-11 a.m.	5.8	30	2-3 p.m.
1900	1.5	18	4-5 p.m.	1.2	9	7-8 p.m.	9.4	13	4-5 p.m.
1901	0.1	30	6-7 a.m.	4.1	5	3-4 p.m.	10.5	31	1-2 p.m.
1902	9.3	20	3-4 p.m.	0.6	14	0-1 p.m.	7.5	10	1-2 p.m.

YEAR.	APRIL.			MAY.			JUNE.		
	Mm.	Date.	Hour.	Mm.	Date.	Hour.	Mm.	Date.	Hour.
1885	16.0	22	8-9 p.m.	1.0	4	4-5 p.m.	34.0	29	5-6 a.m.
1886	13.3	29	4-5 p.m.	16.5	2	2-3 p.m.	24.0	16	3-4 p.m.
1887	10.8	3	2-3 p.m.	36.5	22	9-10 p.m.	25.0	21	8-9 p.m.
1888	14.0	20	7-8 p.m.	4.0	21	7-8 p.m.	27.1	17	7-8 p.m.
1889	2.5	23	3-4 a.m.	0.0	0	0	47.2	30	2-3 p.m.
1890	14.6	15	3-4 a.m.	10.3	6	2-3 p.m.	27.1	15	3-4 p.m.
1891	4.0	29	4-5 p.m.	42.0	29	7-8 p.m.	55.0	15	7-8 a.m.
1892	5.0	4	4-5 a.m.	60.0	21	5-6 p.m.	11.8	11	[1]11-12
1893	12.0	14	9-10 p.m.	13.8	16	9-10 a.m.	5.0	18 28	2-3 p.m. 1-2 p.m.
1894	16.3	30	11-12 noon	21.3	10	9-10 p.m.	25.4	28	1-2 p.m.
1895	2.0	29	5-6 p.m.	25.5	13	9-10 a.m.	31.8	26	0-1 a.m.
1896	3.0	27	2-3 p.m.	33.6	17	5-6 a.m.	16.0	6	5-6 p.m.
1897	10.7	30	10-11 p.m.	11.5	28	2-3 p.m.	33.0	16	4-5 p.m.
1898	14.5	13	1-2 p.m.	25.0	10	9-10 p.m.	38.2	10	4-5 a.m.
1899	16.0	22	6-7 p.m.	9.2	16	1-2 p.m.	37.5	28	4-5 p.m.
1900	2.0	27	9-10 p.m.	30.0	22	2-3 a.m.	37.4	27	8-9 p.m.
1901	5.2	28	3-4 p.m.	15.8	16	4-5 p.m.	12.5	13	5-6 a.m.
1902	1.7	15	10-11 a.m.	10.9	31	7-8 p.m.	48.5	1	4-5 p.m.

YEAR.	JULY.			AUGUST.			SEPTEMBER.		
	Mm.	Date.	Hour.	Mm.	Date.	Hour.	Mm.	Date.	Hour.
1885	27.2	24	3-4 p.m.	25.0	30	8-9 p.m.	9.0	17	7-8 p.m.
1886	30.8	30	0-1 a.m.	42.0	26	5-6 p.m.	23.3	18	8-9 a.m.
1887	31.5	20	8-9 p.m.	20.0	17	7-8 p.m.	52.5	18	6-7 p.m.
1888	42.8	23	4-5 a.m.	47.0	27	2-3 a.m.	47.0	17	7-8 p.m.
1889	32.7	15	6-7 a.m.	48.0	6	1-2 p.m.	26.5	10	2-3 a.m.
1890	50.0	16	5-6 p.m.	20.5	25	7-8 p.m.	38.4	10	[1]10-12
1891	26.2	27	9-10 a.m.	22.0	8	7-8 p.m.	50.3	15	5-6 p.m.
1892	40.0	30	0-1 a.m.	20.3	28	5-6 p.m.	26.5	13	7-8 a.m.
1893	27.1	9	9-10 p.m.	32.0	21	10-11 p.m.	40.0	18	1-2 a.m.
1894	27.8	18	6-7 p.m.	29.7	5	8-9 p.m.	25.8	15	7-8 p.m.
1895	24.8	18	8-9 p.m.	23.4	3	5-6 p.m.	30.3	11	6-7 p.m.
1896	12.5	23	11-12 noon	32.8	28	7-8 p.m.	44.0	6	1-2 a.m.
1897	21.0	26	4-5 p.m.	46.0	28	3-4 p.m.	24.5	2	7-8 p.m.
1898	23.0	17	3-4 p.m.	40.0	8	[1]11-12	47.2	14	1-2 a.m.
1899	51.3	19	1-2 a.m.	38.0	19	8-9 p.m.	27.4	20	3-4 a.m.
1900	26.5	30	5-6 p.m.	39.6	12	9-10 p.m.	32.3	7	7-8 p.m.
1901	29.0	12	0-1 p.m.	17.2	15	0-1 p.m.	24.7	15	10-11 p.m.
1902	39.0	10	2-3 p.m.	16.0	18	5-6 p.m.	30.5	21	3-4 p.m.

[1] Midnight.

TABLE 24.—*Maximum rainfall in each month, observed in Manila during the period 1885–1902*—Continued.

YEAR.	OCTOBER.			NOVEMBER.			DECEMBER.		
	Mm.	Date.	Hour.	Mm.	Date.	Hour.	Mm.	Date.	Hour.
1885	24.0	6	6–7 p.m.	6.0	17	[1]11–12	3.0	3	4–5 p.m.
1886	31.5	10	4–5 p.m.	11.3	5	1–2 a.m.	7.0	19	1–2 p.m.
1887	17.0	5	1–2 p.m.	21.9	26	8–9 a.m.	25.6	5	2–3 p.m.
1888	27.0	9	9–10 p.m.	4.8	16	5–6 p.m.	13.3	5	5–6 p.m.
1889	14.5	18	4–5 p.m.	12.8	4	2–3 a.m.	22.0	9	3–4 p.m.
1890	17.5	14	0–1 p.m.	24.0	11	10–11 a.m.	10.0	19	0–1 p.m.
1891	15.5	9	5–6 p.m.	49.8	16	3–4 p.m.	10.8	3	0–1 a.m.
1892	15.6	7	0–1 a.m.	12.6	4	1–2 p.m.	10.5	26	[1]11–12
1893	22.4	11	[1]11–12	11.0	22	3–4 p.m.	2.0	22	6–7 a.m.
1894	21.6	22	1–2 p.m.	10.0	3	5–6 p.m.	16.2	2	4–5 a.m.
1895	21.2	7	7–8 p.m.	17.0	6	1–2 p.m.	4.0	24	5–6 a.m.
1896	10.0	12	[1]11–12	.....	21	2–3 p.m.	0.1	5, 15	0–1 p.m.
1897	9.7	7	6–7 p.m.	17.7	21	2–3 p.m.	8.5	31	6–7 a.m.
1898	21.8	6	[1]11–12	35.5	22	1–2 p.m.	2.4	23	7–8 a.m.
1899	10.5	1	9–10 p.m.	14.3	14	5–6 p.m.	16.5	19	3–4 p.m.
1900	19.5	5	3–4 p.m.	22.0	9	7–8 p.m.	8.7	11	2–3 p.m.
1901	22.0	14	7–8 p.m.	21.0	13	0–1 p.m.	18.0	12	6–7 p.m.
1902	21.0	6	1–2 a.m.	24.0	8	10–11 p.m.	11.4	28	11–12 noon

[1] Midnight.

The following Tables, 25, 26, and 27, substantiate what has been said about the distribution of rainfall over the archipelago. They are the result of the observations made in different localities since the establishment of weather service in the islands. Finally, Table 28 compares the yearly average of rainfall in Manila with that of several points in the Far East and in the United States, and Plate V shows the annual variation of rainfall in various places of the Philippines, the Antilles, and the United States.

TABLE 25.—*Monthly averages of rainfall and days of rain at different places in Luzón.*

STATION.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.
Vigan (10 years)	0.0	0.2	0.0	0.0	4.3	0.2	3.5	0.7
Bolinao (12 years)	1.2	0.3	1.5	0.4	11.3	0.8	10.1	1.4
Santiago (12 years)	6.5	2.0	0.2	0.1	5.7	0.8	4.6	0.8
Dáet (2 years)	252.3	21.5	177.9	11.5	226.7	18.0	81.4	9.5
Atimonan (3 years)	116.7	16.7	81.3	10.3	73.3	7.7	75.0	6.7
Albay (6 years)	233.5	21.3	168.2	15.2	229.0	16.3	155.4	13.7
Aparri (9 years)	230.9	11.7	98.8	6.1	48.7	5.7	27.9	3.2
Tuguegarao (2 years)	3.4	2.0	1.1	1.0	11.2	4.0	23.2	3.5
San Isidro (10 years)	15.9	1.5	6.5	1.1	18.9	1.8	23.3	2.5
Tayabas (7 years)	124.0	10.4	48.9	7.7	60.2	8.1	23.8	5.5

STATION.	MAY.		JUNE.		JULY.		AUGUST.	
	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.
Vigan (10 years)	89.2	2.9	217.4	10.0	535.6	13.8	289.4	13.9
Bolinao (12 years)	122.6	6.9	382.5	14.1	558.2	17.0	525.4	18.1
Santiago (12 years)	99.4	5.3	186.9	8.2	368.2	14.5	239.9	12.3
Dáet (2 years)	189.5	12.5	139.7	11.5	211.4	15.0	382.2	17.5
Atimonan (3 years)	163.3	10.3	169.1	13.3	258.4	18.3	178.7	15.0
Albay (6 years)	188.3	15.0	207.6	17.8	266.2	19.7	242.1	21.5
Aparri (9 years)	66.9	5.4	58.3	5.3	129.4	7.5	174.1	10.5
Tuguegarao (2 years)	27.1	5.0	52.6	14.0	154.6	16.5	68.0	10.0
San Isidro (10 years)	210.1	12.0	192.7	13.8	339.4	19.8	282.9	19.8
Tayabas (7 years)	100.7	9.9	88.6	13.0	96.6	12.7	73.9	12.6

TABLE 25.—*Monthly averages of rainfall and days of rain at different places in Luzón*—Continued.

STATION.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		TOTAL.	
	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.
Vigan (10 years)	486.1	15.8	176.4	5.0	65.5	1.9	0.3	0.1	1,867.7	64.5
Bolinao (12 years)	584.0	17.5	192.1	7.5	34.4	2.6	8.1	1.0	2,431.4	87.6
Santiago (12 years)	321.5	14.4	120.8	9.5	101.6	7.5	57.5	5.1	1,512.8	80.5
Díet (2 years)	269.3	14.0	313.9	21.0	205.6	19.0	436.9	24.0	2,886.8	195.0
Atimonan (3 years)	166.8	12.0	408.7	22.0	530.7	22.3	428.5	21.0	2,650.5	175.6
Albay (6 years)	299.9	19.2	212.5	15.5	301.1	18.5	457.0	24.8	2,960.8	218.5
Aparri (9 years)	242.0	12.3	285.8	11.4	241.0	14.6	264.5	16.3	1,868.3	110.0
Tuguegarao (2 years)	76.1	14.0	143.8	15.5	50.2	8.5	89.1	14.5	700.4	108.5
San Isidro (10 years)	361.5	20.7	168.0	11.3	102.0	7.0	51.6	4.6	1,772.8	115.9
Tayabas (7 years)	116.5	15.0	239.0	15.0	283.2	14.1	195.4	18.7	1,450.8	142.7

TABLE 26.—*Monthly averages of rainfall and days of rain at different places in the Visayas and Mindanao.*

STATION.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.
Mambúrao (2 years)	3.2	2.5	2.3	3.0	9.4	4.0	29.9	5.0
Zamboanga (2 years)	41.2	11.2	27.0	7.0	58.5	9.0	21.8	5.0
Joló (5 years)	103.1	5.5	45.6	2.5	44.2	3.7	88.3	4.5
Iloílo (4 years)	23.5	3.3	24.1	3.8	29.3	5.3	34.5	6.8
Cebú (5 years)	91.6	11.0	52.1	11.2	64.0	10.8	21.2	6.6
Tamontaca (2 years)	61.4	6.0	50.3	5.0	128.0	9.0	82.8	8.0
Dávao (2 years)	283.5	17.5	124.8	10.0	71.0	14.5	161.7	13.0
Tándag (2 years)	682.5	27.5	403.6	22.0	624.4	23.0	356.3	23.5

STATION.	MAY.		JUNE.		JULY.		AUGUST.	
	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.
Mambúrao (2 years)	271.8	13.0	595.0	22.0	327.0	26.5	997.1	24.5
Zamboanga (2 years)	86.6	10.0	162.4	12.5	94.1	12.5	39.1	9.0
Joló (5 years)	243.3	13.0	144.8	10.3	145.9	11.7	117.8	9.0
Iloílo (4 years)	222.9	11.5	174.2	17.8	367.8	18.3	238.8	22.0
Cebú (5 years)	102.6	10.2	191.4	16.8	160.8	16.0	165.8	15.8
Tamontaca (2 years)	191.2	11.3	312.3	13.0	224.8	16.5	200.6	12.0
Dávao (2 years)	123.8	17.0	197.9	18.0	247.6	19.0	160.7	17.0
Tándag (2 years)	217.4	15.0	164.3	15.5	217.1	14.5	123.7	12.5

STATION.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		TOTAL.	
	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.	Amount (mm.).	No. of days.
Mambúrao (2 years)	485.4	20.5	323.3	17.0	48.2	4.5	23.7	5.0	3,116.3	147.5
Zamboanga (2 years)	73.6	10.0	95.6	13.0	74.6	11.0	111.6	11.0	886.1	121.0
Joló (5 years)	149.5	9.0	163.9	13.0	127.8	8.7	160.2	10.3	1,534.4	101.2
Iloílo (4 years)	272.0	20.0	220.1	16.7	126.0	13.8	63.1	13.3	1,796.3	152.6
Cebú (5 years)	165.2	14.4	169.4	15.0	116.3	14.2	171.7	19.0	1,472.1	161.0
Tamontaca (2 years)	293.8	13.0	136.5	9.5	151.2	10.5	76.7	7.5	1,909.6	121.3
Dávao (2 years)	159.5	14.0	234.8	19.0	66.6	15.0	208.5	13.0	2,040.4	187.0
Tándag (2 years)	187.5	10.0	198.3	12.5	284.1	19.0	966.0	28.0	4,425.2	223.0

PLATE V.

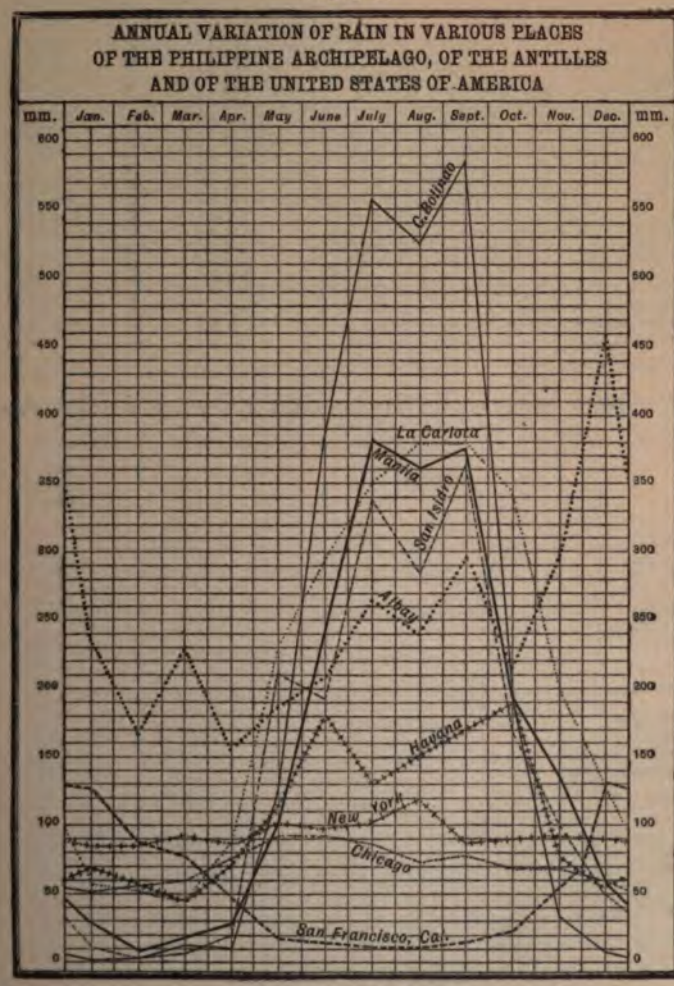

ANNUAL VARIATION OF RAIN IN VARIOUS PLACES
OF THE PHILIPPINE ARCHIPELAGO, OF THE ANTILLES
AND OF THE UNITED STATES OF AMERICA
mm.
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
mm.
600
550
500
450
400
350
300
250
200
150
100
50
0
C. Bolinao
La Carlota
Manila
San Isidro
Albay
Habana
New York
Chicago
San Francisco, Cal.

TABLE 27.—*Yearly averages of rainfall in several places of the archipelago during the two periods of the year, November to May and June to October, inclusive.*

STATION.	NOVEMBER TO MAY.		JUNE TO OCTOBER.	
	Millimeter.	Per cent.	Millimeter.	Per cent.
Manila	379.5	20	1,537.1	80
Vigan	247.7	11	2,109.6	89
Bolinao	155.4	7	2,209.4	93
Punta Santiago	283.2	19	1,234.3	81
Dáet	1,468.6	53	1,285.9	47
Atimonan	1,468.8	55	1,181.7	45
Albay	1,732.4	59	1,228.2	41
Aparri	1,049.2	54	905.2	46
Tuguegarao	205.2	29	494.9	71
San Isidro	461.2	25	1,390.0	75
Tayabas	1,002.0	61	640.8	39
La Carlota	805.4	31	1,785.9	69
Joló	716.6	47	823.9	53
Iloílo	494.4	29	1,229.5	71
Cebú	550.5	41	788.8	59
Dávao	963.8	49	995.3	51
Tándag	3,218.3	75	1,080.9	25
Matti, southeast of Mindanao	905.8	66	467.5	34
Yap, Western Carolinas	734.9	39	1,160.1	61
San Luis de Apra, Guam	303.3	24	951.9	76

TABLE 28.—*Yearly average of rain at several points of the Far East and the United States.*

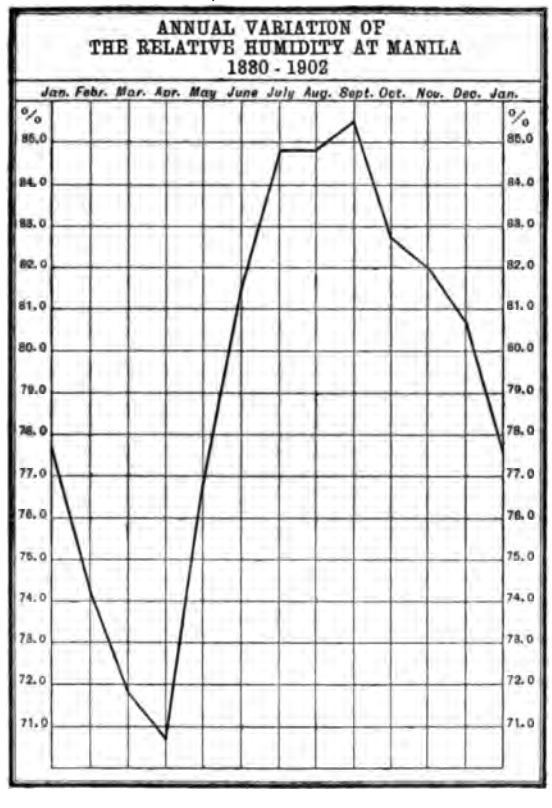
STATION.	Yearly average (mm.).	Years of observation.
Manila (Luzón)	1,938.3	38
Bolinao (Luzón)	2,326.5	9
Punta Santiago (Luzón)	1,517.5	9
San Isidro (Luzón)	1,796.0	9
Albay (Luzón)	2,816.9	7
La Carlota (Negros)	2,591.3	9
Iloílo (Panay)	1,774.2	4
Cebú	1,198.4	3
Joló	1,505.8	3
Tándag (Mindanao)	4,425.2	2
Hongkong	2,205.9	0
Zikawei, Shanghai	1,119.0	24
Tokyo, Japan	1,467.6	21
Yap, Western Carolinas	1,895.0	1
San Luis de Apra, Guam	1,255.2	2
Honolulu	996.2	20
San Francisco	594.4	47
Chicago	863.6	30
New York	1,135.4	61
Washington	1,089.6	41
New Orleans	1,531.6	26
Key West	970.3	49
Habana	1,314.2	30
San Juan, Porto Rico	1,510.0	14

RELATIVE HUMIDITY.

The quantity of water vapor in the atmosphere has a direct influence on climate, because it checks to some extent the radiation, and consequently may diminish the diurnal and annual ranges of temperature. Hence, the knowledge of the ratio between the observed vapor pressure and the vapor pressure at saturation under existing conditions of temperature is of importance in climatology.

Table 29 presents the relative humidity for Manila only, showing the annual and monthly averages of relative humidity during a period

PLATE VI.


ANNUAL VARIATION OF
THE RELATIVE HUMIDITY AT MANILA
1880 - 1902
Jan. Febr. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan.
%
85.0
84.0
83.0
82.0
81.0
80.0
79.0
78.0
77.0
76.0
75.0
74.0
73.0
72.0
71.0

of twenty years; in Table 30 appears the comparison of monthly and annual averages; in Table 31 the absolute minima; in Table 32 the average monthly variations of relative humidity; and in Table 33 the monthly and annual averages, of the tension of the aqueous vapor.

Plate VI presents graphically the annual variation of the relative humidity at Manila; Plate VII compares temperature with humidity and cloudiness, confirming what has been pointed out concerning the influence of humidity and water vapor on the temperature, or on the thermic oscillation (range of temperature); Plate VIII shows the annual variation of the tension of aqueous vapor.

TABLE 29.—*Monthly and annual averages of relative humidity in Manila: 1883–1902.*

[Per cent.]

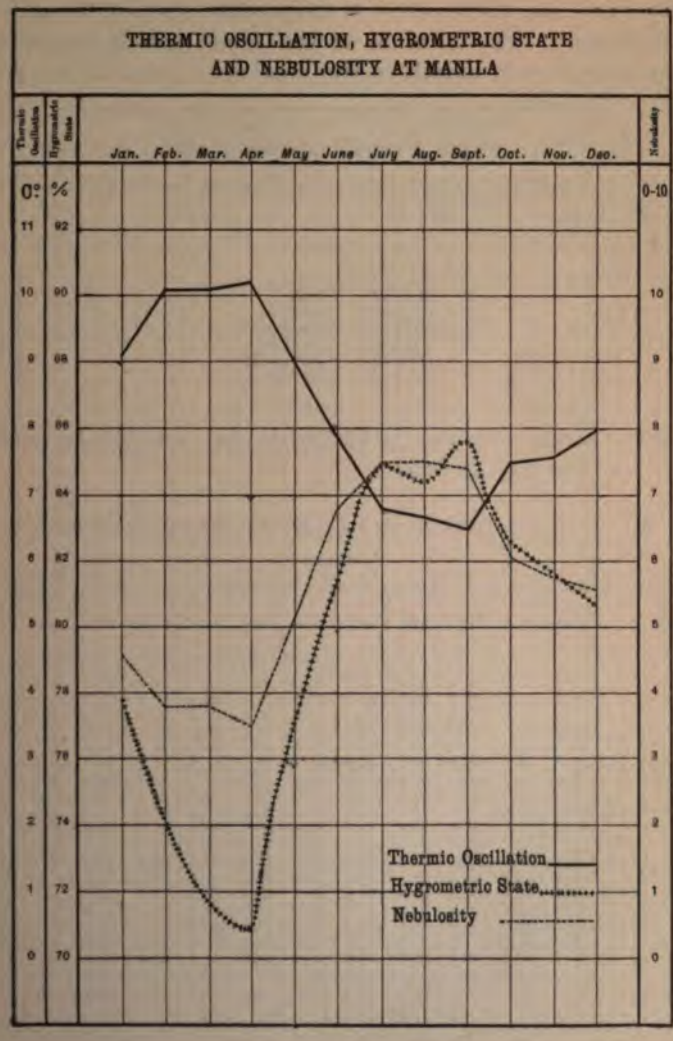
YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Annual average.
1883	76.7	73.3	71.6	74.8	77.2	83.0	85.1	83.9	86.6	80.8	78.4	83.8	79.6
1884	77.1	75.7	70.1	68.4	75.1	81.6	86.1	83.8	83.4	79.9	77.4	79.0	78.1
1885	74.2	75.6	68.7	68.3	72.0	75.0	81.0	82.3	80.2	80.8	80.5	78.2	76.4
1886	79.5	74.2	66.8	73.7	75.8	82.5	84.5	82.6	86.7	85.7	81.1	82.9	79.7
1887	81.6	75.6	79.4	78.2	84.1	86.6	90.0	84.8	89.9	83.2	85.3	87.3	83.8
1888	83.6	73.5	71.0	72.0	72.2	82.9	90.8	85.5	82.8	83.7	82.9	80.7	80.1
1889	84.2	80.3	75.9	68.0	68.6	80.0	83.3	84.4	85.8	85.0	83.9	85.8	80.4
1890	78.4	74.2	68.9	73.1	79.2	81.8	83.2	82.4	87.1	85.6	80.5	79.3	79.5
1891	76.0	70.2	70.0	67.0	69.4	84.2	85.8	86.9	86.6	79.4	81.9	79.7	78.1
1892	76.5	72.7	72.3	67.4	75.0	79.0	83.8	84.1	85.9	82.1	82.2	78.4	78.3
1893	76.4	72.8	70.7	71.3	80.1	78.5	84.0	85.2	86.7	82.4	79.0	77.8	78.7
1894	75.0	71.9	70.6	66.9	77.9	81.3	83.0	83.9	85.7	83.0	79.8	80.3	78.3
1895	77.5	73.4	71.1	72.9	83.4	83.4	83.4	84.3	86.8	79.2	80.9	77.1	79.4
1896	73.8	72.7	71.4	66.6	84.1	83.3	84.5	88.8	85.7	83.1	81.9	79.2	79.6
1897	75.6	71.4	69.3	68.2	77.2	76.0	83.5	85.1	85.4	83.1	83.6	83.0	78.5
1898	77.3	77.6	78.9	77.5	79.7	84.1	86.2	83.1	83.6	84.9	85.7	78.7	81.4
1899	77.9	74.0	73.3	73.1	77.5	81.9	86.7	85.1	84.5	82.4	84.9	80.4	80.1
1900	77.5	76.9	74.2	68.7	73.5	80.6	83.9	86.7	86.3	83.3	82.3	81.5	79.6
1901	75.3	75.1	71.4	68.4	76.9	81.6	83.3	86.7	84.1	83.9	86.4	79.6	79.4
1902	77.6	72.3	70.1	68.7	75.9	80.9	83.9	86.8	85.8	82.0	80.6	80.6	78.8
Average	77.6	74.2	71.8	70.7	76.7	81.4	84.8	84.8	85.5	82.7	82.0	80.7	79.4

TABLE 30.—*The normal monthly averages of relative humidity compared with the annual average and the extreme monthly averages: 1884–1901.*

[Per cent.]

MONTH.	Normal average.	Monthly minus annual average.	EXTREME DEPARTURES OF MONTHLY FROM MEAN MONTHLY AVERAGES.	
			Maximum positive difference.	Maximum negative difference.
January	77.6	−1.8	6.6 (1889)	3.8 (1896)
February	74.2	−5.2	6.1 (1889)	4.0 (1891)
March	71.8	−7.6	7.6 (1887)	5.0 (1886)
April	70.7	−8.7	7.5 (1887)	3.9 (1896)
May	76.7	−2.7	7.4 (1887, 1896)	8.1 (1889)
June	81.4	+2.0	5.2 (1887)	6.4 (1885)
July	84.8	+5.4	6.0 (1888)	3.8 (1885)
August	84.8	+5.4	4.0 (1896)	2.5 (1885)
September	85.5	+6.1	4.4 (1887)	5.3 (1885)
October	82.7	+3.3	3.0 (1886)	3.5 (1895)
November	82.0	+2.6	4.4 (1901)	4.6 (1884)
December	80.7	+1.3	6.6 (1887)	3.6 (1895)
Year	79.4	.....	.....	.....

PLATE VII


THERMIC OSCILLATION, HYGROMETRIC STATE
AND NEBULOSITY AT MANILA
Thermic Oscillation
Hygrometric State
Nebulosity
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
C.° %
0-10
11 92
10 90
9 88
8 86
7 84
6 82
5 80
4 78
3 76
2 74
1 72
0 70
10
9
8
7
6
5
4
3
2
1
0
Thermic Oscillation
Hygrometric State
Nebulosity

The extreme departures of the annual mean from the normal annual mean were: Positive, 4.4 (1887); negative, 3.0 (1885).

During the whole period 1883–1902 the absolute monthly maximum of relative humidity was only four times below 95 per cent, namely, 93 per cent (March 6, 1884 and April 28, 1900), 94 per cent (March 6, 1885 and April 14, 1893), while it frequently reached 99 and 100 per cent (saturation). The minima of the same meteorological element corresponding to each month in the year are shown in the following table:

TABLE 31.—*Minima of relative humidity in Manila: 1884–1902.*

MONTH.	Per cent.	MONTH.	Per cent.
January	40.0 (3, 1897; 19, 27, 1901)	June	36.0 (1, 1892)
February	31.0 (12, 1901)	July	51.0 (28, 1900)
March	31.5 (13, 1897)	August	52.0 (16, 1895)
April	33.0 (10, 1888; 9, 1896)	September	51.0 (22, 1888)
May	32.0 (15, 1888; 8, 1902)	October	46.0 (22, 1885)
		November	39.0 (26, 1884)
		December	39.5 (2, 1885)

Hence the lowest relative humidity during the whole period was observed on February 12, 1901.

TABLE 32.—*Average monthly variations of relative humidity in Manila: 1885–1902.*

[Per cent.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1885	32.0	32.0	33.4	33.4	33.7	34.2	26.9	28.0	30.5	31.1	28.9	24.8	30.7
1886	28.7	31.3	34.9	33.3	31.5	30.1	30.4	32.4	26.2	28.9	31.0	28.0	30.6
1887	32.4	33.9	33.1	32.8	31.7	29.0	19.7	31.2	22.1	29.5	27.5	26.9	29.2
1888	26.2	38.7	38.5	40.4	41.1	28.4	19.0	23.8	31.4	30.1	31.1	32.7	31.8
1889	31.2	32.3	38.1	40.4	38.9	34.8	29.6	27.6	30.6	27.6	26.2	23.7	31.8
1890	35.7	38.3	41.9	36.0	34.2	31.1	28.4	31.9	24.9	28.0	29.7	34.0	32.8
1891	31.0	34.8	36.9	37.0	36.8	26.5	22.2	22.7	22.5	33.5	29.7	28.4	30.2
1892	30.8	37.8	39.2	38.6	38.2	35.5	26.1	30.8	22.8	28.6	26.5	29.6	32.0
1893	33.3	36.6	36.7	36.4	31.6	33.5	26.3	26.1	24.3	27.9	26.4	27.5	30.6
1894	34.0	34.8	34.8	38.4	33.9	30.4	28.7	26.8	26.0	29.6	30.3	32.0	31.6
1895	34.2	37.1	36.4	34.7	26.8	28.9	28.9	26.8	22.4	33.1	31.1	30.6	30.9
1896	35.0	35.5	36.1	35.8	25.8	27.2	26.4	19.0	23.1	25.7	28.7	29.3	29.0
1897	35.5	33.2	36.5	36.3	32.0	30.6	26.9	25.3	23.9	27.7	27.2	24.8	30.0
1898	30.0	32.2	30.0	32.5	30.1	25.2	25.4	20.2	29.9	25.0	22.6	27.1	27.5
1899	27.4	32.4	33.8	36.0	31.2	31.2	17.6	23.2	25.6	26.4	24.7	31.9	28.5
1900	31.5	30.0	33.0	37.4	35.2	28.6	28.5	22.0	21.7	26.6	26.7	27.1	29.0
1901	36.4	28.8	35.6	36.4	33.0	29.2	28.5	21.3	23.7	25.2	24.8	29.1	29.3
1902	27.7	30.5	35.1	36.6	32.3	28.6	25.0	21.2	22.2	30.0	32.2	30.3	29.3
Average	31.8	33.9	35.8	36.2	33.2	30.2	25.8	25.6	25.2	28.6	28.1	28.8	30.3

PLATE VIII.

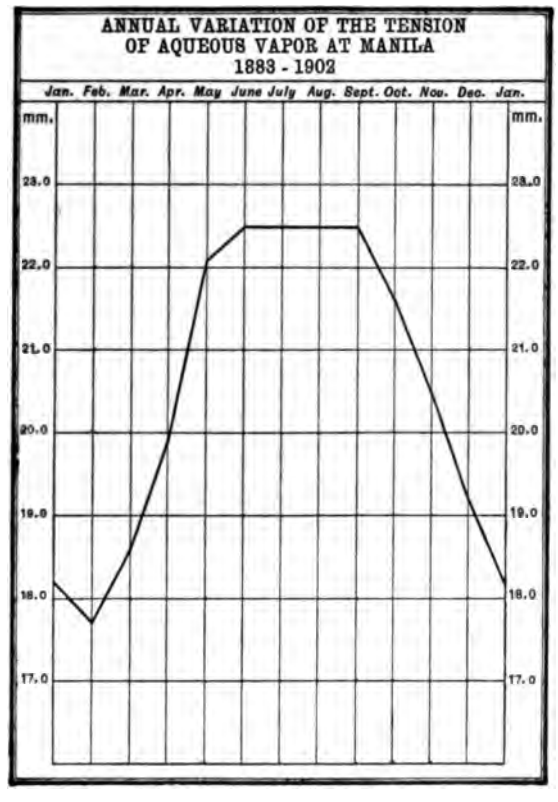

ANNUAL VARIATION OF THE TENSION
OF AQUEOUS VAPOR AT MANILA
1883 - 1902
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan.
mm.
23.0
22.0
21.0
20.0
19.0
18.0
17.0

TABLE 33.—*Monthly and annual averages of the tension of aqueous vapor in Manila: 1883–1902.*

[Millimeters.]

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1883	18.1	17.6	19.5	20.9	22.3	22.0	21.9	22.8	22.1	20.7	19.2	18.6	20.4
1884	16.5	17.3	17.7	18.8	21.0	21.5	21.6	21.5	21.5	20.5	19.1	17.7	19.6
1885	16.8	17.0	17.2	18.2	20.7	20.9	21.6	21.9	21.9	21.6	20.3	18.7	19.7
1886	18.7	16.9	16.9	20.9	21.8	22.5	22.5	22.4	23.0	22.0	20.2	19.3	20.6
1887	19.4	18.0	20.4	21.3	23.0	23.5	23.8	22.6	22.7	21.1	21.3	20.9	21.5
1888	19.5	17.3	19.2	20.9	21.5	22.9	22.8	22.8	22.6	21.9	21.2	20.1	21.1
1889	20.6	20.4	20.3	20.3	21.6	23.1	22.6	22.5	23.3	22.4	21.5	20.0	21.6
1890	19.0	18.2	18.3	20.3	22.1	21.9	22.1	22.0	22.2	21.4	19.3	18.7	20.5
1891	17.3	16.4	17.9	19.2	21.3	22.8	22.3	22.4	22.7	21.4	20.5	19.2	20.3
1892	18.2	17.9	18.9	18.7	21.8	22.0	22.5	22.1	22.3	21.6	20.2	18.4	20.4
1893	17.0	17.3	18.0	20.0	22.1	21.4	22.4	22.9	22.3	21.0	19.3	18.6	20.2
1894	17.2	16.8	18.1	18.8	21.6	22.3	22.1	22.5	22.3	21.7	19.4	18.9	20.1
1895	17.8	17.2	18.4	20.6	23.3	23.2	22.7	22.4	22.7	21.4	19.8	18.1	20.6
1896	16.8	17.8	18.9	18.9	22.9	23.3	22.7	22.6	22.8	22.2	20.8	18.9	20.7
1897	18.3	18.0	18.9	20.0	23.2	23.0	22.5	22.6	22.8	22.2	21.8	20.0	21.1
1898	18.8	19.5	19.9	21.3	22.5	23.0	22.3	22.4	22.2	22.2	21.3	19.3	21.2
1899	18.6	17.4	17.9	20.2	21.7	22.1	22.9	22.4	22.6	21.7	20.8	19.6	20.7
1900	18.3	19.0	20.0	20.0	22.6	22.7	23.0	23.4	23.5	22.2	21.1	19.8	21.3
1901	17.8	17.8	18.3	19.4	22.5	23.1	22.6	22.7	23.1	22.1	21.9	18.7	20.8
1902	18.6	16.0	18.1	19.1	22.1	22.8	22.3	22.9	22.3	21.3	20.1	19.7	20.4
Average	18.2	17.7	18.6	19.9	22.1	22.5	22.5	22.5	22.5	21.6	20.5	19.2	20.7

MOVEMENT OF THE ATMOSPHERE.

SURFACE WINDS.

Another important climatic factor is the wind, because the movement of air increases evaporation and dries the soil, thus increasing the demand of organisms for water and the evaporating capacity of a climate. Besides, the wind affects directly the sensible temperature or the physiological temperature which is not indicated by dry-bulb thermometers.

Under this head are included surface currents, their frequency and direction and the average velocity of these currents; the average direction of higher currents, viz, direction of high clouds, intermediate clouds, and lower clouds; extraordinary currents, viz, general and cyclonic storms, electric storms, mostly local.

The frequency and direction of the winds in Manila should be first considered, since they suggest the prevailing winds in the remainder of the archipelago.

TABLE 34.—*Monthly, annual, and semiannual frequency of the winds in Manila.*

MONTH.	N.		NNE.		NE.		ENE.		E.		ESE.	
	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.
January	1,053	11.8	954	10.7	848	9.5	517	5.8	887	9.9	497	5.6
February	515	6.3	446	5.5	627	7.7	527	6.5	1,197	14.7	795	9.8
March	400	4.5	414	4.6	578	6.5	594	6.7	1,432	16.0	1,022	11.4
April	252	2.9	248	2.9	351	4.1	454	5.3	1,211	14.2	1,142	13.4
May	398	4.5	391	4.4	453	5.1	294	3.3	721	8.1	620	6.9
June	354	4.1	367	4.2	478	5.5	300	3.5	606	7.0	473	5.5
July	348	3.9	281	3.1	309	3.5	240	2.7	369	4.1	268	3.0
August	297	3.4	243	2.8	385	4.4	197	2.3	334	3.8	251	2.9
September	330	3.8	291	3.4	307	3.6	203	2.4	343	4.0	239	2.8
October	562	6.3	664	7.4	615	6.9	322	3.6	516	5.8	330	3.7
November	984	11.4	899	10.4	833	9.6	404	4.7	551	6.4	290	3.4
December	1,314	14.9	1,168	13.2	902	10.2	369	4.2	593	6.7	314	3.6
Annual	6,807	6.5	6,366	6.1	6,686	6.4	4,421	4.2	8,760	8.4	6,241	6.0
November to May, inclusive	4,916	8.0	4,520	7.4	4,592	7.5	3,159	5.2	6,592	10.8	4,680	7.7
June to October, inclusive	1,891	4.3	1,846	4.2	2,094	4.8	1,262	2.9	2,168	4.9	1,561	3.6

MONTH.	SE.		SSE.		S.		SSW.		SW.		WSW.	
	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.
January	341	3.8	124	1.4	114	1.3	158	1.8	358	4.0	457	5.1
February	591	7.3	184	2.3	103	1.3	141	1.7	328	4.0	483	5.9
March	741	8.3	284	3.2	125	1.4	154	1.7	385	4.2	506	5.7
April	996	11.7	334	3.9	142	1.7	188	2.2	430	5.0	471	5.5
May	637	7.1	301	3.4	296	3.3	413	4.6	872	9.8	743	8.3
June	529	6.1	294	3.4	411	4.8	534	6.2	1,027	11.9	680	7.9
July	373	4.2	316	3.5	463	5.2	907	10.2	1,719	19.3	778	8.7
August	224	2.6	221	2.5	461	5.3	892	10.2	1,712	19.6	1,008	11.5
September	257	3.0	269	3.1	466	5.4	833	9.7	1,700	19.7	910	10.6
October	328	3.7	243	2.7	300	3.4	465	5.2	729	8.2	656	7.3
November	244	2.8	141	1.6	147	1.7	194	2.2	342	4.1	378	4.4
December	159	1.8	93	1.1	100	1.1	151	1.7	258	2.9	376	4.3
Annual	5,420	5.2	2,804	2.7	3,128	3.0	5,030	4.8	9,860	9.4	7,446	7.1
November to May, inclusive	3,709	6.1	1,461	2.4	1,027	1.7	1,399	2.3	2,973	4.9	3,414	5.6
June to October, inclusive	1,711	3.9	1,343	3.1	2,101	4.8	3,631	8.3	6,887	15.7	4,032	9.2

MONTH.	W.		WNW.		NW.		NNW.		CALM.		Total observations.
	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	
January	410	4.6	161	1.8	151	1.7	185	2.1	1,713	19.2	8,928
February	431	5.3	184	2.3	99	1.2	88	1.1	1,397	17.2	8,136
March	451	5.1	149	1.7	90	1.0	108	1.2	1,495	16.6	8,928
April	471	5.5	182	2.1	84	1.0	69	0.8	1,519	17.8	8,544
May	534	6.0	169	1.9	96	1.1	120	1.3	1,870	20.9	8,928
June	409	4.7	180	2.1	142	1.6	90	1.0	1,766	20.4	8,640
July	445	5.0	211	2.4	173	1.9	119	1.3	1,609	18.0	8,928
August	412	4.7	194	2.2	151	1.7	139	1.6	1,615	18.5	8,736
September	437	5.1	188	2.2	148	1.7	132	1.5	1,563	18.1	8,616
October	421	4.7	200	2.2	142	1.6	171	1.9	2,264	25.4	8,928
November	343	4.0	162	1.9	183	2.1	237	2.7	2,308	26.7	8,640
December	311	3.5	153	1.7	169	1.9	247	2.8	2,155	24.4	8,832
Annual	5,075	4.8	2,133	2.0	1,628	1.6	1,705	1.6	21,274	20.3	104,784
November to May, inclusive	2,961	4.8	1,160	1.9	872	1.4	1,054	1.7	12,457	20.4	60,936
June to October, inclusive	2,124	4.8	973	2.2	756	1.7	651	1.5	8,817	20.1	43,848

In the following summary will be seen the maximum and minimum frequency or repetition of the winds in the different months of the year:

MONTH.	FREQUENCY.		MONTH.	FREQUENCY.	
	Maximum.	Minimum.		Maximum.	Minimum.
January	N.	S.	July	SW.	NNW.
February	E.	NNW.	August	SW.	NNW.
March	E.	NW.	September	SW.	NNW.
April	E.	NNW.	October	SW.	NW.
May	SW.	NW.	November	N.	SSE.
June	SW.	NNW.	December	N.	SSE. and S.

The prevailing wind in Manila, therefore, is from the southwest from May until October, inclusive; that is to say, for about six months. From November to January, inclusive, north winds prevail, and during the other three months, February, March, and April, the easterly winds prevail. The lowest frequency of the north and northwest winds occurs from February to October, and that of the south and south-southeast winds in the months of November, December, and January.

Table 34 shows that in the months in which the north wind has the greatest per cent the north-northeast and northeast winds prevail mostly after that, and also that in the months in which the east winds are most prevalent the next frequency corresponds to the east-southeast and southeast, if we leave out the month of February, which gives the northeast wind a larger per cent than that from the southeast. Accordingly it can be said that from November to January, both inclusive, the north and northeast winds prevail, while in the months of February, March, and April the east and southeast winds prevail.

As to the months in which the southwest winds prevail, it is to be seen that May and October are not far below the maximum frequency of east and north-northeast winds, from which it appears that May is the month of the veering of the winds from east to those of southwest, and that October is the month wherein they change from southwest to those of the north.

Applying Lambert's complete form and substituting each of the 16 directions instead of the corresponding per cent the table gives us, we will have found the medium or resultant directions for each of the twelve months in the year, as follows:

MONTH.	Resultant.	MONTH.	Resultant.
January	N. 41° 07′ E.	July	S. 34° 28′ W.
February	N. 83° 13′ E.	August	S. 40° 48′ W.
March	S. 84° 18′ E.	September	S. 39° 41′ W.
April	S. 63° 31′ E.	October	S. 75° 32′ E.
May	S. 16° 55′ E.	November	N. 27° 45′ E.
June	S. 0° 41′ E.	December	N. 24° 13′ E.

From the annual sums or totals and the corresponding percentage which we have given in Table 34 the annual variation of the winds can be deduced, which is herewith graphically represented in the drawing on Plate IX.

These facts show that the prevailing winds during the year are those from the southwest, followed by those from the east. The frequency or prevalence of those from the other directions diminish in the following order: West-southwest, north, northeast, north-northeast, east-southeast, southeast, south-southwest, west, east-northeast, south, south-southeast, west-northwest, northwest, and north-northwest.

We have divided the year into two periods, from November to May, inclusive, and from June to October, inclusive, and we have added to Table 34 the corresponding facts which have helped us to give in the two drawings on Plate X the semiannual variation of the wind direction in Manila. During the period from June to October those from the southwest are most prevalent, those from the east and north having the maximum prevalence in the other period.

Annual medium or resultant direction	S. 58° 42′ E.
Medium semiannual direction:	
June to October, inclusive	S. 32° 41′ W.
November to May, inclusive	N. 70° 30′ E.

From the continuous record of the force and direction of the wind in many years, the following important conclusions are drawn:

1. The calms or very light winds prevail in all the months during the hours of the night, their maximum prevalence being from 6 to 7 a. m., and most commonly at 7 in the morning, except in the months of November and December, when, according to observations, calms occur mostly at 9 o'clock at night.

2. The minimum prevalence of calms takes place at about 12 o'clock noon, or, in other words, at the time of greatest heat.

3. From the month of December to April, both inclusive, the winds of the third quarter very rarely take place during the night, or after 8 o'clock in the morning.

4. Nevertheless, these winds from south to west generally prevail in all the months of the year from 9, 10, or 11 o'clock in the morning until 3 or 4 o'clock in the afternoon, owing to the sea breezes, which in Manila blow in that direction or quarter. In the month of April these breezes often prevail until 1 p. m., giving way then to the winds from east-southeast, which are proper in this month and which are often strong in the few hours of the afternoon.

5. In those months in which the winds of the third quadrant prevail, in the first few hours of the day the winds of the first and second quadrants also prevail to a certain extent. In the month of June these give a maximum frequency from 8 o'clock at night until 8 o'clock in the morning.

PLATE IX.

ANNUAL PROGRESSION OF THE WINDS AT MANILA.

5 mm. = 1 %

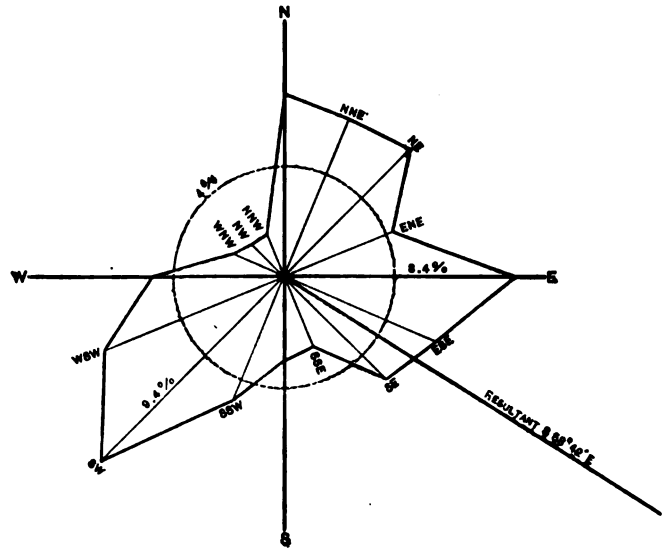
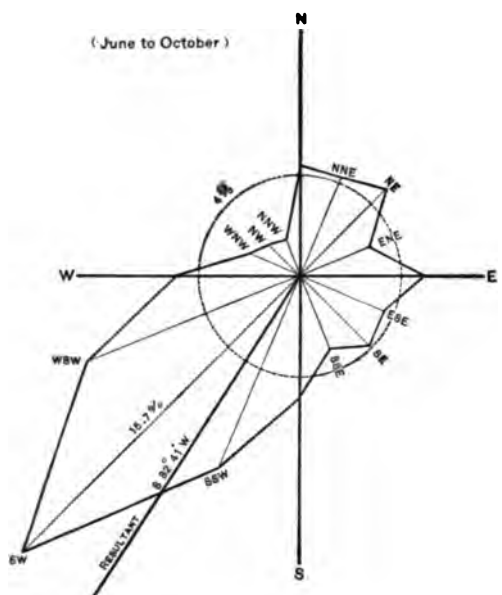
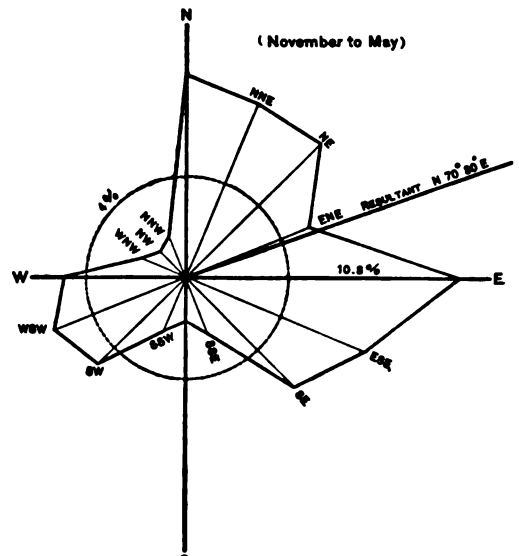


PLATE X.

SEMIANNUAL PROGRESSION OF THE WINDS AT MANILA.

5 mm.=1%





In Table 35 we give the final results of hourly observations, that is to say, the summary for the period 1892–1898, the corresponding percentage for each of the twenty-four hours of the day, and the principal direction.

TABLE 35.—*Frequency of the wind in Manila, with direction noted by hours, for period 1892–1898.*

DIRECTION.	1 A. M.		2 A. M.		3 A. M.		4 A. M.		5 A. M.		6 A. M.	
	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.
N	230	6.6	242	6.9	255	7.3	261	7.4	254	7.2	227	6.5
NNE	188	5.5	233	6.8	264	7.7	262	7.6	221	6.4	222	6.4
NE	190	4.9	235	6.0	245	6.3	297	7.6	294	7.5	270	6.9
ENE	100	4.0	135	5.4	133	5.3	153	6.1	170	6.7	160	6.3
E	160	3.6	151	3.4	141	3.2	142	3.2	172	3.9	164	3.7
ESE	142	3.9	116	3.2	105	2.9	97	2.6	94	2.6	102	2.8
SE	150	4.3	117	3.3	104	3.0	89	2.5	62	1.8	60	1.7
SSE	69	3.9	66	3.8	45	2.6	58	3.3	33	1.9	38	2.2
S	53	3.0	39	2.2	53	3.0	40	2.3	34	1.9	39	2.2
SSW	88	3.2	99	3.6	69	2.5	65	2.4	47	1.7	45	1.6
SW	94	1.9	78	1.6	81	1.6	64	1.3	51	1.0	48	1.0
WSW	65	1.3	62	1.2	58	1.2	52	1.0	36	0.7	31	0.6
W	30	1.0	32	1.0	23	0.7	28	0.9	21	0.7	19	0.6
WNW	19	1.5	25	1.9	16	1.2	18	1.4	15	1.2	7	0.5
NW	29	3.0	25	2.6	25	2.6	19	2.0	28	2.9	19	2.0
NNW	47	4.8	48	4.9	50	5.1	50	5.1	39	4.0	48	4.9
Calm	886	6.6	837	6.3	873	6.5	845	6.3	969	7.2	1,041	7.8

DIRECTION.	7 A. M.		8 A. M.		9 A. M.		10 A. M.		11 A. M.		12 NOON.	
	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.
N	228	6.5	243	6.9	178	5.1	92	2.6	64	1.8	57	1.6
NNE	232	6.7	223	6.5	169	4.9	93	2.7	66	1.9	55	1.6
NE	247	6.3	251	6.4	139	3.6	91	2.3	65	1.7	68	1.7
ENE	166	6.6	118	4.7	85	3.4	44	1.7	54	2.1	43	1.7
E	158	3.6	144	3.3	114	2.6	101	2.3	61	1.4	92	2.1
ESE	79	2.2	99	2.7	97	2.6	89	2.4	93	2.5	98	2.7
SE	47	1.3	79	2.3	101	2.9	85	2.4	80	2.3	90	2.6
SSE	35	2.0	59	3.4	65	3.7	38	2.2	45	2.6	46	2.6
S	41	2.3	82	4.6	132	7.4	104	5.9	90	5.1	72	4.1
SSW	46	1.7	71	2.6	138	5.0	168	6.1	159	5.8	142	5.2
SW	50	1.0	74	1.5	194	3.9	322	6.5	345	7.0	373	7.6
WSW	32	0.6	53	1.1	250	5.0	411	8.2	540	10.7	589	11.7
W	12	0.4	37	1.2	197	6.3	403	12.9	472	15.1	485	15.5
WNW	10	0.8	21	1.6	83	6.4	156	12.1	179	13.9	161	12.5
NW	23	2.4	34	3.5	85	8.7	104	10.7	95	9.8	62	6.4
NNW	40	4.1	65	6.6	87	8.9	75	7.6	40	4.1	31	3.2
Calm	1,094	8.2	887	6.6	426	3.2	164	1.2	92	0.7	76	0.6

TABLE 35.—*Frequency of the wind in Manila, with direction noted by hours, for period 1892–1898*—Continued.

DIRECTION.	1 P. M.		2 P. M.		3 P. M.		4 P. M.		5 P. M.		6 P. M.	
	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.
N	57	1.6	55	1.6	73	2.1	79	2.3	78	2.2	83	2.4
NNE	75	2.2	80	2.3	86	2.5	102	3.0	121	3.5	106	3.1
NE	73	1.9	110	2.8	111	2.8	140	3.6	134	3.4	142	3.6
ENE	53	2.1	66	2.6	81	3.2	99	3.9	141	5.6	125	5.0
E	94	2.1	115	2.6	155	3.5	182	4.1	247	5.6	326	7.4
ESE	118	3.2	126	3.4	148	4.0	208	5.7	202	5.5	252	6.9
SE	119	3.4	139	4.0	189	5.4	224	6.4	239	6.8	211	6.0
SSE	66	3.8	85	4.8	116	6.5	147	8.4	121	6.9	93	5.3
S	69	3.9	91	5.1	87	4.9	97	5.5	98	5.5	89	5.0
SSW	150	5.4	154	5.6	158	5.7	151	5.5	149	5.4	129	4.7
SW	379	7.7	375	7.6	403	8.2	377	7.7	348	7.1	321	6.5
WSW	588	11.7	532	10.6	436	8.7	342	6.8	241	4.8	189	3.8
W	398	12.7	327	10.4	213	6.8	122	3.9	59	1.9	36	1.1
WNW	143	11.1	112	8.7	87	6.7	48	3.7	34	2.6	26	2.0
NW	53	5.4	53	5.4	59	6.1	43	4.4	34	3.5	26	2.7
NNW	25	2.5	30	3.1	18	1.8	25	2.5	24	2.4	17	1.7
Calm	80	0.6	90	0.7	121	0.9	154	1.2	270	2.0	369	2.8

DIRECTION.	7 P. M.		8 P. M.		9 P. M.		10 P. M.		11 P. M.		12 MIDNIGHT.		Total observations.
	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	Number of cases.	Per cent.	
N	77	2.2	88	2.5	101	2.9	132	3.8	167	4.8	183	5.2	3,504
NNE	87	2.5	77	2.2	83	2.4	114	3.3	126	3.7	161	4.7	3,446
NE	124	3.2	115	2.9	112	2.9	121	3.1	144	3.7	188	4.8	3,906
ENE	119	4.7	90	3.6	98	3.9	104	4.1	94	3.7	92	3.6	2,523
E	370	8.4	349	7.9	292	6.6	255	5.8	232	5.3	188	4.3	4,405
ESE	269	7.3	245	6.7	245	6.7	248	6.8	216	5.9	175	4.8	3,663
SE	218	6.2	206	5.9	254	7.3	238	6.8	205	5.9	191	5.5	3,497
SSE	91	5.2	93	5.3	95	5.4	96	5.5	85	4.8	75	4.3	1,759
S	89	5.0	93	5.2	89	5.0	78	4.4	73	4.1	43	2.4	1,775
SSW	150	5.4	141	5.1	125	4.5	105	3.8	100	3.6	105	3.8	2,754
SW	272	5.5	207	4.2	161	3.3	123	2.5	100	2.0	87	1.8	4,927
WSW	132	2.6	118	2.3	82	1.6	62	1.2	62	1.2	69	1.4	5,032
W	46	1.5	31	1.0	35	1.1	40	1.3	38	1.2	29	0.9	3,133
WNW	18	1.4	24	1.9	26	2.0	25	1.9	19	1.5	18	1.4	1,290
NW	17	1.7	24	2.5	24	2.5	33	3.4	31	3.2	28	2.9	973
NNW	13	1.3	26	2.6	44	4.5	40	4.1	52	5.3	49	5.0	983
Calm	448	3.3	613	4.6	674	5.0	726	5.4	796	5.9	859	6.4	13,390

From this table, and considering the whole period, we reach the following conclusions:

1. The frequency of the calms reaches its maximum at 7 in the morning, then diminishes from 8 to 12, and increases from 1 in the afternoon until 1 in the morning; the frequency at 2, 3, and 4 a. m. is a trifle less than that of 1 a. m., increasing again from 5 to 7 a. m.

2. Between 1 and 8 a. m. the prevalence of the winds from the north and northeast is very apparent.

3. In like manner the prevalence of the winds of the third quadrant is more apparent at 4 and 5 in the afternoon.

4. From 6 p. m. to 12 midnight, winds from the east and southeast mostly prevail.

Table 36 contains the monthly and annual averages of the daily velocity of the wind in kilometers, taken from hourly observations in

the observatory during 1885–1898. In ascertaining the average of the whole period of fourteen years we have obtained for each month the normal averages which are at the foot of the table. Accordingly, they show that the force of the winds increases gradually from January to May, decreases a very little in May, increases again in June and July, and decreases for the second time in August, reaching its maximum in September, and decreases again from October to December, in which latter month the minimum annual velocity is attained. The annual average of the daily velocity of wind resulting from the fourteen years of study is 217.8 kilometers. The greater or less degree in which they differ from this annual average and different monthly averages can be seen from the following table:

TABLE 36.—*Monthly and annual averages of the daily velocity of the wind in Manila during the period 1885–1898.*

[Kilometers.]

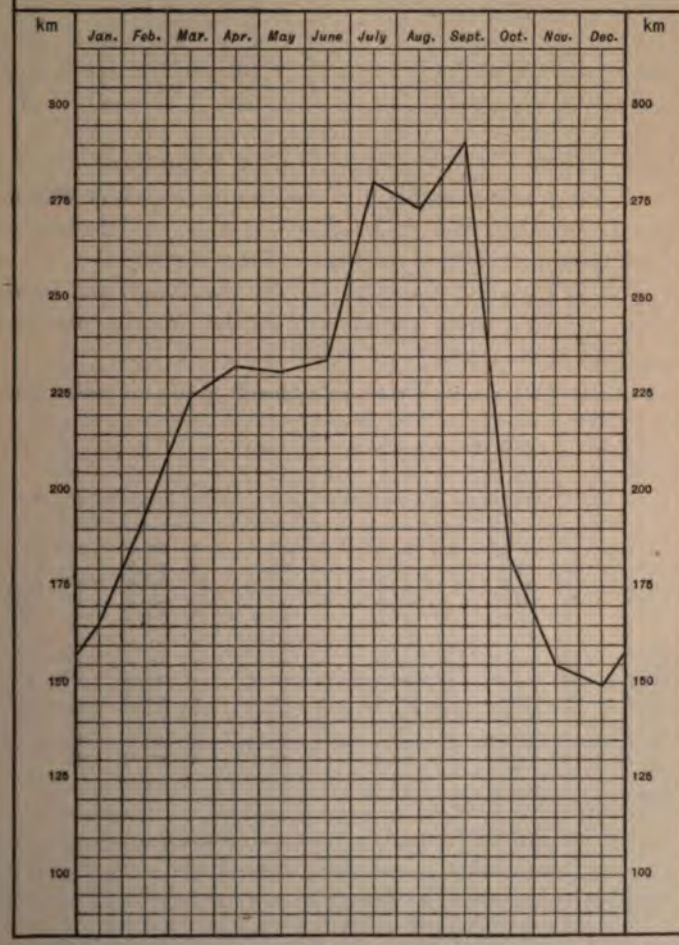
YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Average.
1885	232.4	301.5	353.4	367.5	381.8	414.7	449.7	428.3	306.5	218.7	263.5	247.6	330.5
1886	245.5	268.8	345.9	323.0	229.5	223.8	196.4	223.3	288.9	133.9	136.9	126.5	228.5
1887	120.9	150.4	178.5	197.0	178.4	153.6	415.4	141.9	360.3	165.9	122.1	100.3	190.4
1888	116.4	188.7	169.8	189.8	168.7	299.3	364.9	337.1	181.1	121.2	105.3	109.5	196.0
1889	113.7	115.6	184.0	193.9	186.1	173.5	174.7	191.9	110.9	154.1	119.9	158.3	156.4
1890	106.4	116.3	159.9	147.6	110.5	109.0	209.8	199.6	287.1	163.9	119.0	100.5	152.5
1891	112.0	163.1	185.4	184.9	187.6	194.0	291.1	247.8	345.5	77.4	120.5	115.0	185.4
1892	132.8	132.1	169.1	187.6	187.3	172.7	270.7	127.8	312.0	160.0	109.8	95.3	171.4
1893	199.9	219.3	238.9	239.0	324.2	171.2	330.2	299.8	454.1	242.1	220.9	190.6	260.9
1894	213.1	201.9	259.3	257.9	226.6	302.5	281.5	324.2	347.8	214.5	189.1	209.4	252.5
1895	192.7	214.5	250.1	265.1	288.2	255.8	291.2	299.5	391.5	182.1	179.9	171.9	248.5
1896	114.3	121.7	131.5	235.8	337.2	203.9	274.7	353.6	258.8	315.4	133.0	169.8	220.8
1897	216.4	258.8	281.3	277.8	210.1	332.3	203.1	210.9	241.0	196.6	136.9	157.1	226.9
1898	205.8	247.2	240.3	190.2	222.8	276.2	166.5	447.1	188.8	206.6	206.6	138.1	228.0
Average	165.9	192.9	224.8	232.7	231.4	234.5	280.0	273.8	291.0	182.3	154.5	149.3	217.8

MONTH.	Monthly average.	Difference.
January	165.9	−51.9
February	192.9	−24.9
March	224.8	+ 7.0
April	232.7	+14.9
May	231.4	+13.6
June	234.5	+16.7
July	280.0	+62.2
August	273.8	+56.0
September	291.0	+73.2
October	182.3	+35.5
November	154.5	−63.3
December	149.3	−68.5
Year	217.8	.....

The greatest annual average was 330.5 km. (1885); the least, 152.5 km. (1890). The maximum monthly average reached 454.1 km. in September, 1893; the minimum, 77.4, in October, 1891.

PLATE XI.

ANNUAL VARIATION OF THE DAILY VELOCITY
OF THE WIND AT MANILA
1885 - 1893



In the following summary we give the maximum and minimum averages of each as compared with the corresponding normal average:

MONTH.	Normal monthly averages.	Positive.	Negative.
January	165.9	79.6 (1886)	59.5 (1890)
February	192.9	108.6 (1885)	77.3 (1889)
March	224.8	128.6 (1885)	93.3 (1896)
April	232.7	134.8 (1885)	85.1 (1890)
May	231.4	150.4 (1885)	120.9 (1890)
June	234.5	180.2 (1885)	125.5 (1890)
July	280.0	169.7 (1885)	113.5 (1898)
August	273.8	173.3 (1898)	146.0 (1892)
September	291.0	163.1 (1893)	180.1 (1889)
October	182.3	133.1 (1896)	104.9 (1891)
November	154.5	109.9 (1885)	49.2 (1888)
December	149.3	98.3 (1885)	54.0 (1892)

The greatest number of maximum positive differences are for the year 1885 and the greatest number of maximum negative differences for the year 1890, being the respective years to which belong the maximum and minimum annual averages of the period.

Tables 37 and 38 embody, respectively, the maximum and minimum daily velocities of the wind registered in the Manila observatory during the period 1885–1898.

TABLE 37.—*Maximum daily velocity of the wind in Manila during the period 1885–1898.*

YEAR.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.
1885	366.0	22	407.0	20	488.0	26	627.5	1	589.5	17	1,031.5	28
1886	478.5	30	398.0	1	478.0	8	436.5	5	415.6	8	641.5	12
1887	263.0	9	238.9	9	271.2	31	612.3	18	383.9	27	361.0	15
1888	229.3	21	405.9	4	254.8	26	250.7	25	293.8	18	525.5	14
1889	174.6	7	431.5	10	268.5	8	310.0	14	255.3	28	333.3	11
1890	233.0	28	215.7	17	250.8	20	277.1	30	217.7	1	207.2	29
1891	169.8	4	255.1	21	247.6	31	314.3	1	262.8	15	384.4	8
1892	285.8	16	199.5	20	288.9	26	252.9	21	319.5	10	422.3	9
1893	272.5	27	313.1	15	398.3	20	337.0	1	1,007.5	15	218.3	25
1894	312.2	22	300.4	6	380.5	23	331.7	5	413.0	8	990.0	26
1895	322.0	24	299.8	5	356.8	28	358.0	22	780.6	14	808.7	24
1896	195.4	3	220.7	23	230.7	8	374.7	15	1,042.0	17	650.4	6
1897	305.5	8	389.0	21	353.5	12	374.5	8	282.0	15	701.5	27
1898	366.0	29	316.0	15	438.5	16	299.5	8	821.0	31	598.0	18
Average	283.8	.....	242.2	.....	336.1	.....	368.3	.....	506.0	.....	562.4	.....

YEAR.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Annual maximum (km.).
	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	
1885	977.5	23	1,000.0	24	816.4	4	384.5	13	1,159.5	4	412.5	30	1,159.5
1886	522.2	12	458.5	13	558.6	21	574.2	9	440.8	18	367.2	18	641.5
1887	994.6	24	440.3	1	1,051.1	19	844.9	5	373.6	27	174.6	12	1,051.1
1888	1,008.1	14	765.3	15	847.6	27	284.0	23	263.0	16	315.5	5	1,008.1
1889	450.0	11	606.2	21	251.9	25	575.0	29	336.4	4	542.1	4	606.2
1890	634.8	15	342.2	6	1,477.6	30	723.2	17	1,037.3	11	170.9	13	1,477.6
1891	1,022.3	17	580.5	2	847.8	12	197.3	16	732.2	16	487.6	23	1,022.3
1892	941.5	22	369.5	15	752.4	7	609.8	9	526.9	22	155.8	4	941.5
1893	1,006.5	24	706.9	31	1,420.5	30	749.9	1	388.3	22	455.5	5	1,420.5
1894	647.0	19	786.0	2	1,311.8	17	912.7	3	458.0	17	483.2	22	1,311.8
1895	702.8	21	791.5	22	1,212.0	4	509.0	1	536.0	2	265.0	17	1,212.0
1896	730.4	28	821.2	8	503.5	9	1,191.5	4	203.5	3	299.0	23	1,191.5
1897	773.5	26	770.0	9	777.5	14	752.5	13	249.5	13	313.0	31	777.5
1898	423.5	31	1,038.0	4	429.0	30	629.5	25	843.5	13	331.0	9	1,038.0
Average	773.9	.....	676.9	.....	875.6	.....	638.4	.....	539.2	.....	340.9	.....	1,061.4

TABLE 38.—*Minimum daily velocity of the wind in Manila during the period 1885–1898.*

YEAR.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		MAY.		JUNE.	
	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.
1885	150.5	9	195.0	1	206.0	12	241.0	23	252.0	16	217.0	5
1886	137.5	6	127.0	12	253.0	13	195.6	30	122.6	23	51.4	24
1887	66.0	26	102.5	6	88.0	6	87.7	2	78.9	20	40.5	20
1888	49.1	24	109.2	2	112.9	12	135.5	30	87.8	8	108.1	18
1889	66.5	30	75.9	15	114.4	1	141.5	2	92.6	25	52.2	28
1890	49.3	1	63.7	3	81.7	3	68.0	29	15.4	30	53.5	22
1891	72.7	5	75.4	8	107.8	11	118.9	9	54.3	31	48.3	24
1892	57.7	10	56.0	9	97.8	7	107.1	29	100.3	29	78.5	30
1893	132.5	9	150.6	12	104.6	1	155.5	9	155.5	30	99.6	20
1894	132.6	12	138.2	4	163.7	19	199.8	3	133.5	26	122.0	10
1895	113.3	6	135.0	1	140.0	1	143.2	29	145.3	22	121.3	13
1896	19.2	30	50.6	5	46.8	2	152.9	22	118.0	27	52.5	9
1897	122.5	22	124.0	11	136.5	15	184.5	18	131.0	29	135.0	17
1898	108.0	21	97.5	27	112.5	26	114.5	3	96.0	24	86.5	8
Average	91.2	.....	107.2	.....	126.1	.....	146.1	.....	113.1	.....	90.5	.....

YEAR.	JULY.		AUGUST.		SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Annual minimum (km.).
	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	Km.	Date.	
1885	163.0	13	149.5	28	159.0	9	168.5	4	124.0	10	131.5	2	124.0
1886	65.6	7	53.7	28	56.4	28	54.8	21	42.0	20	40.2	31	40.2
1887	49.4	7	33.5	13	58.8	1	60.7	9	45.8	1	47.4	1	33.5
1888	90.9	18	107.1	23	70.9	19	43.9	29	16.4	9	56.6	18	16.4
1889	61.9	25	16.9	9	25.1	17	27.0	6	44.4	7	22.0	6	16.9
1890	30.6	22	39.0	18	45.2	21	46.7	26	18.2	18	64.8	11	15.4
1891	47.8	23	51.8	17	36.2	15	28.4	2	13.5	27	42.1	18	13.5
1892	54.6	4	49.0	21	57.5	19	24.0	17	10.1	6	41.0	9	10.1
1893	120.2	18	100.2	23	120.7	14	97.2	16	106.0	27	72.5	21	72.5
1894	139.5	15	74.8	21	100.5	5	102.0	30	104.0	5	111.4	28	74.8
1895	118.6	28	121.5	5	122.0	9	115.7	23	105.0	23	101.3	22	101.3
1896	102.5	11	132.1	4	95.5	27	84.5	26	78.0	9	70.7	8	19.2
1897	105.0	8	70.5	23	53.0	18	94.5	11	62.0	4	80.5	20	53.0
1898	79.0	6–19	149.5	18	86.5	27	62.5	19–23	3.0	30	35.5	3	3.0
Average	87.8	.....	82.1	.....	77.7	.....	72.2	.....	55.2	.....	65.5	.....	42.4

According to the results at the foot of Tables 37 and 38, the average of the annual maximum velocity is 1,061.4 km., and the minimum annual velocity 42.4 km., there being a difference of 1,019 km.

A gradual increase is to be observed from one month to another in the average values of the maximum and the minimum velocities.

The first increase is from February to July, inclusive, decreasing somewhat in August, and increasing to the annual maximum average in September. In the following month it decreases gradually until it reaches the annual minimum average velocity in February.

Far different is the relation between the monthly average difference and that of the daily minimum averages. In effect the maximum average values correspond to the month of April, decreasing later without stopping until they reach the minimum average velocity in the month of November. From December they again increase without interruption until the month of April. The greatest minimum averages are those of February, March, April, and May. This we believe is due to the fact that in normal days these are the four months in which

the winds often increase in force, and even though in the season of atmospheric disturbances there are normal days to be found in which the minimum velocity of the wind is recorded, generally more in the remaining months of the year than those above mentioned.

The maximum daily velocity during the period 1885–1898 (1,477.6 km.), was recorded the 30th day of September, 1890, when a violent typhoon crossed the center of Luzón, north of Manila.

The minimum velocity was recorded on the 30th of November, 1898, during which the wind blew 3 kilometers.

In the following summary is shown the maximum and minimum daily velocities during the whole periods corresponding to each of the twelve months in the year:

[Kilometers.]

MONTH.	Maximum.	Minimum.
January	478.5 (1886)	19.2 (1896)
February	431.5 (1889)	50.6 (1896)
March	483.0 (1886)	46.8 (1896)
April	647.5 (1885)	68.0 (1890)
May	1,042.0 (1896)	15.4 (1890)
June	1,031.5 (1885)	40.5 (1887)
July	1,022.3 (1891)	30.6 (1890)
August	1,033.0 (1898)	16.9 (1889)
September	1,477.6 (1890)	25.1 (1889)
October	1,191.5 (1896)	24.0 (1892)
November	1,159.5 (1885)	3.0 (1898)
December	542.1 (1889)	22.0 (1889)

The manner in which the maximum and minimum annual velocities of the winds are distributed in each month is seen in the following statement:

Maximum:		Minimum:	
June	1	January	1
July	3	May	1
August	2	August	3
September	6	September	1
October	4	November	5
November	1	December	3

The maximum velocities occur most frequently in the month of September, and the minimum in the month of November; that is to say, in the first mentioned month the average of the maxima is greatest, and in the last mentioned month the average of the minima is greatest. In September there have occurred the greatest number of annual maxima, it being the month in which typhoons most abound; and for this same cause the next maximum frequency of velocity is found in the months of July and August.

TABLE 39.—*Monthly, annual, and semiannual average values of the hourly velocity of the wind in Manila: 1892–1898.*

[Kilometers.]

MONTH.	0–1 a. m.	1–2 a. m.	2–3 a. m.	3–4 a. m.	4–5 a. m.	5–6 a. m.	6–7 a. m.	7–8 a. m.	8–9 a. m.	9–10 a. m.	10–11 a. m.	11–12 noon.
January	4.3	4.6	4.7	5.0	4.8	4.8	4.7	4.9	5.6	7.3	10.8	11.9
February	4.1	3.9	3.8	3.9	4.0	3.8	3.5	3.2	4.4	7.5	11.3	12.9
March	4.7	4.1	4.0	4.1	4.0	4.1	3.9	4.1	5.4	8.8	12.7	14.4
April	4.3	3.9	3.7	3.6	3.8	3.8	3.3	3.6	6.3	10.4	13.8	14.4
May	6.5	6.1	5.8	5.9	5.6	5.3	5.2	5.8	7.9	11.0	13.4	14.7
June	6.2	5.8	6.0	6.0	5.7	5.2	5.3	6.3	7.9	10.4	13.4	15.2
July	7.4	7.6	7.5	7.7	7.2	6.2	5.7	5.7	7.0	9.3	12.6	13.5
August	9.0	8.1	7.8	8.1	7.4	6.8	7.0	7.5	8.3	10.8	13.4	14.9
September	9.4	9.7	9.7	9.0	8.6	8.0	8.0	8.7	9.3	11.7	14.5	15.6
October	6.7	6.5	6.5	6.3	6.6	5.8	5.7	6.3	7.4	9.4	11.5	12.6
November	4.8	4.9	4.9	4.9	5.2	4.7	4.8	5.3	6.0	7.8	9.9	11.7
December	4.1	4.0	4.5	4.6	4.7	4.6	5.0	5.3	6.1	7.4	9.7	10.1
Average	6.0	5.8	5.7	5.8	5.6	5.3	5.2	5.6	6.8	9.3	12.3	13.5
Average, November to May, inclusive	4.7	4.5	4.5	4.4	4.6	4.4	4.3	4.6	6.0	8.6	11.7	12.9
Average, June to October, inclusive	7.7	7.5	7.5	7.4	7.1	6.4	6.3	6.9	8.0	10.3	13.1	14.4

MONTH.	12–1 p. m.	1–2 p. m.	2–3 p. m.	3–4 p. m.	4–5 p. m.	5–6 p. m.	6–7 p. m.	7–8 p. m.	8–9 p. m.	9–10 p. m.	10–11 p. m.	11–12 night.	Average.
January	13.1	13.8	12.5	12.5	11.8	9.5	7.9	7.2	5.9	5.3	4.8	4.6	7.6
February	13.4	13.8	13.9	14.9	14.8	12.9	10.7	9.3	7.7	6.8	6.0	4.7	8.1
March	15.5	16.4	16.9	17.8	17.5	15.3	12.3	10.0	8.3	7.7	6.6	5.6	9.3
April	15.9	17.1	18.1	18.8	18.8	16.0	13.0	11.6	10.2	8.7	7.3	5.6	9.8
May	15.3	16.1	17.0	17.2	17.1	15.7	13.8	13.1	10.7	9.3	7.9	6.9	10.6
June	16.3	17.1	17.1	17.1	16.4	14.1	12.1	10.3	9.2	8.5	7.3	6.3	10.2
July	15.3	16.6	17.6	17.2	16.7	15.3	12.9	12.3	10.8	9.9	9.5	8.6	10.8
August	16.2	18.3	19.5	20.2	19.2	17.1	15.9	14.0	11.9	10.5	9.9	9.5	12.1
September	17.1	19.2	19.7	20.5	19.8	18.1	16.0	15.4	12.9	11.6	10.6	9.6	13.0
October	13.9	13.3	13.4	13.5	12.5	11.0	10.0	9.6	8.2	7.2	6.8	6.4	9.0
November	11.4	11.6	11.0	10.0	8.9	7.2	6.5	6.0	5.1	5.0	5.1	5.1	7.0
December	11.5	11.8	11.4	10.8	9.9	7.3	6.1	5.3	4.6	4.3	4.2	4.1	6.8
Average	14.6	15.4	15.7	15.9	15.3	13.3	11.4	10.3	8.8	7.9	7.2	6.4	9.5
Average, November to May, inclusive	13.7	14.4	14.4	14.6	14.1	12.0	10.0	8.9	7.5	6.7	6.0	5.2	8.5
Average, June to October, inclusive	15.8	16.9	17.5	17.7	16.9	15.1	13.4	12.3	10.6	9.5	8.8	8.1	11.0

Table 39 contains the averages of the monthly, annual, and semiannual velocities corresponding to each of the twenty-four hours of the day, obtained from hourly observations during the period 1892–1898.

From the monthly average values, as well as the annual and semiannual ones, we obtain the result that the minimum force of the wind is felt generally from 6 to 7 in the morning, and the greatest force from 3 to 4 in the afternoon—that is to say, almost in the hours of most heat. Nevertheless, in October, November, December, and January the maximum average is from 1 to 2 in the afternoon. The hourly averages of the period from November to May are always lower than those of the period from June to October. The force of the wind from 1 to 8 a. m. seems to be greater in the months of Novem-

ber, December, and January than in the three following months, February, March, and April. On the contrary, in these three latter months, in which the winds from east to southeast prevail, the average velocity in the hours from 11 a. m. to 11 p. m. is greater than in the three former months, the winds from north to northeast prevailing. And yet in the month of April the mean or average velocity from 3 to 7 p. m. is more than that of the months of May, June, and July.

According to the last result obtained in the table we find that the hourly average of the observations during the period 1892–1898 was 9.5 km. per hour, or 2.6 m. per second. The monthly averages varied between 13.0 km. (September) and 6.8 km. (December), a difference of 6.2 km.

Comparing Tables 35 and 40 it is readily seen that the winds which are accustomed to blow in Manila with greatest force are those of the southwest, which predominate from May to October, and those of the east-southeast, which belong to February, March, and April, and in part to May.

TABLE 40.—*Maximum velocity of the wind recorded in Manila in the interval of one hour during the period 1885–1898.*

YEAR.	JANUARY.			FEBRUARY.			MARCH.		
	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.
1885	37.0	22	2–3 p. m.	36.5	26	3–4 p. m.	42.5	31	1–2 p. m.
1886	35.0	30	1–2 p. m.	37.5	25	1–2 p. m.	41.0	11	2–3 p. m.
1887	22.7	8	3–4 p. m.	24.5	19	2–3 p. m.	27.1	16	4–5 p. m.
1888	27.2	21	5–6 p. m.	30.5	4	8–9 a. m.	23.2	22 25	5–6 p. m. 4–5 p. m.
1889	25.0	15	0–1 p. m.	39.7	10	8–9 p. m.	27.8	27	2–3 p. m.
1890	23.8	3	11–12 noon.	23.5	17	1–2 p. m. 2–3 p. m.	32.0	20	0–1 p. m.
1891	28.0	25	3–4 p. m.	27.8	10	1–2 p. m.	33.5	31	5–6 p. m.
1892	23.3	26	4–5 p. m.	22.5	20	3–4 p. m.	30.8	26	4–5 p. m.
1893	29.0	27	0–1 a. m.	29.0	24	5–6 p. m.	39.0	19	4–5 p. m.
1894	27.0	22	3–4 p. m.	30.0	14	3–4 p. m.	42.0	27	3–4 p. m.
1895	28.5	29	1–2 p. m.	33.0	4	7–8 p. m.	33.5	15	2–3 p. m.
1896	23.4	24	4–6 p. m.	30.0	23	4–5 p. m.	43.4	8	9–10 p. m.
1897	36.5	1	2–3 p. m.	37.0	16	3–4 p. m.	35.0	27	2–3 p. m.
1898	30.0	7	2–3 p. m.	29.0	19	5–6 p. m.	35.0	15 16	0–1 p. m. 9–10 a. m.
Average	28.3	.....	.....	30.8	.....	.....	34.7	.....	.....

TABLE 40.—*Maximum velocity of the wind recorded in Manila in the interval of one hour during the period 1885–1898*—Continued.

YEAR.	APRIL.			MAY.			JUNE.		
	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.
1885	48.0	1	2–3 p. m. 5–6 p. m.	53.0	15	3–4 p. m.	66.0	29	0–1 p. m.
1886	40.0	10 12	0–1 p. m. 2–3 p. m. 3–4 p. m.	37.1	17	4–5 p. m.	56.4	11	4–5 p. m.
1887	51.7	18	3–4 p. m.	41.0	12	8–9 p. m.	49.2	15	3–4 p. m.
1888	27.5	12	0–1 p. m.	36.0	18	2–3 p. m.	48.0	19	3–4 p. m.
1889	27.9	7	4–5 p. m.	32.9	31	6–7 p. m.	39.0	13	3–4 p. m.
1890	29.9	21	2–3 p. m.	25.0	3	4–5 p. m.	30.9	11	2–3 p. m.
1891	31.2	4	5–6 p. m.	36.9	14	6–7 p. m.	45.1	3	2–3 p. m.
1892	30.3	19	2–3 p. m.	36.0	10	5–6 p. m.	35.5	9	4–5 p. m.
1893	32.5	1	3–4 p. m.	63.5	15	4–5 a. m.	23.0	7	3–4 p. m.
1894	31.5	28	3–4 p. m.	44.5	8	3–4 p. m.	68.0	28	7–8 a. m.
1895	38.0	26	4–5 p. m.	50.0	13	11–12 noon	52.2	24	1–2 p. m.
1896	41.3	15	2–3 p. m.	60.5	17	7–8 p. m. 10–11 p. m.	48.5	6	4–5 p. m.
1897	40.0	12	1–2 p. m.	28.5	7	3–4 p. m.	48.0	21	0–1 p. m.
1898	29.0	8	1–2 p. m. 2–3 p. m.	50.5	31	5–6 p. m.	41.0	18	1–2 p. m.
Average	35.6	.....	.....	42.5	.....	.....	42.0	.....	.....

YEAR.	JULY.			AUGUST.			SEPTEMBER.		
	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.
1885	69.0	22	8–9 a. m.	59.0	11	9–10 a. m.	57.0	4	1–2 p. m.
1886	40.3	12	4–5 p. m.	55.6	14	1–2 p. m.	44.8	8	1–2 p. m.
1887	52.9	18	0–1 p. m.	35.0	4	3–4 p. m.	79.0	19	2–3 p. m.
1888	60.5	21	6–7 a. m.	55.0	15	2–3 p. m.	69.5	27	2–3 a. m.
1889	52.2	16	4–5 p. m.	52.9	23	3–4 p. m.	35.7	24	11–12 noon. 1–2 p. m.
1890	54.8	16	0–1 a. m.	40.8	6	3–4 p. m.	100.0	30	7–8 a. m.
1891	65.7	17	2–3 a. m.	43.1	2	0–1 p. m.	46.0	6	1–2 p. m.
1892	49.1	22	10–11 a. m.	33.3	16	2–3 p. m.	45.1	7	0–1 a. m.
1893	64.0	17	1–2 a. m.	48.8	31	7–8 p. m.	90.0	30	11–12 midnight.
1894	47.0	24	3–4 p. m.	48.5	11	7–8 p. m.	89.0	17	9–10 a. m.
1895	53.5	27	3–4 a. m.	50.5	22	7–8 p. m.	65.0	4	6–7 a. m.
1896	47.0	28	8–9 a. m.	63.0	8	4–5 a. m.	44.5	12	4–5 p. m.
1897	47.0	26	10–11 a. m. 11–12 noon.	53.0	9	9–10 a. m.	57.0	14	0–1 p. m.
1898	40.0	31	2–3 p. m.	52.0	5	1–2 a. m.	31.5	15	3–4 p. m.
Average	53.0	.....	.....	49.3	.....	.....	61.0	.....	.....

YEAR.	OCTOBER.			NOVEMBER.			DECEMBER.			Maximum annual velocity.
	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.	Kilometers.	Date.	Hour.	
1885	35.0	23	2–3 p. m.	96.0	7	3–4 p. m.	39.0	30	0–1 p. m.	96.0
1886	38.2	9	1–2 p. m.	32.3	17	11–12 noon.	25.0	18	1–2 p. m.	56.4
1887	55.0	4	0–1 p. m.	32.8	27	1–2 p. m.	18.9	10	1–2 p. m.	79.0
1888	27.9	1	5–6 p. m.	27.0	19	4–5 p. m.	19.8	2	2–3 p. m.	69.5
1889	45.3	29	8–9 a. m.	30.5	4	6–7 a. m.	42.0	4	2–3 p. m.	52.9
1890	57.8	17	2–3 p. m.	84.1	11	0–1 p. m.	29.0	17	1–2 p. m.	100.0
1891	20.2	23	5–6 p. m.	58.4	16	8–9 a. m.	28.8	23	10–11 a. m.	65.7
1892	47.4	28	1–2 p. m.	36.2	21	5–6 p. m.	25.9	6	10–11 a. m.	49.1
1893	73.0	1	1–2 a. m.	32.1	15	11–12 noon.	36.0	28	10–11 a. m.	90.0
1894	90.0	3	3–4 a. m.	41.0	17	0–1 p. m.	57.0	22	3–4 p. m.	90.0
1895	37.5	1	4–5 p. m.	50.5	2	1–2 p. m.	25.5	27	1–2 p. m.	65.0
1896	74.0	4	8–9 a. m.	20.0	24	0–1 p. m.	33.5	14	3–4 p. m.	74.0
1897	54.0	13	10–11 a. m.	25.0	13 29	2–3 p. m. 1–2 p. m.	26.0	9	2–3 p. m.	57.0
1898	38.5	25	5–6 a. m.	50.0	13	9–10 a. m.	38.0	9	2–3 p. m.	52.0
Average.	49.6	.....	.....	44.0	.....	.....	31.7	.....	.....	71.2

Table 40 contains the monthly maximum velocities of the wind in Manila in the interval of a single hour during the period 1885–1898.

The maximum velocity recorded was that from 7 to 8 on the morning of the 30th of September, 1890, when the wind blew at the rate of 100 kilometers; that is to say, at the rate of 27.8 meters per second. This last sum is the hourly average of 100 kilometers; but during that hour there were wind squalls or puffs which measured 40 meters per second.

The next greatest velocity was 96 kilometers (26.7 meters per second), recorded from 3 to 4 p. m. on the 7th of November, 1885. The third greatest hourly velocity was 90 kilometers (25 meters per second), taken from 11 to 12 midnight on the 30th of September, 1893, and from 3 to 4 a. m. on the 3d of October, 1894.

All these maximum velocities were occasioned and recorded during the passing of some cyclone north of Manila.

The maximum hourly velocities of each month can be seen in the following statement:

	Kilometers.
January	370 (1885)
February	397 (1889)
March	434 (1896)
April	527 (1889)
May	635 (1893)
June	580 (1890)
July	690 (1880)
August	630 (1896)
September	1,000 (1890)
October	980 (1880)
November	960 (1886)
December	570 (1890)

The fourteen annual maxima are distributed among the different months of the year as follows:

June	1	September	6
July	2	October	2
August	2	November	1

Unfortunately it is impossible to discuss the frequency of the winds in distinct islands and localities of the archipelago, and it is necessary to restrict consideration to the three stations of Aparri, Albay, and Ilofilo, north and south of Luzón and in the center of the Visayan Islands. To accomplish this end we give in Tables 41 and 42 the average frequency of the winds of Aparri and Albay, obtained by six daily observations taken during 1886–1895. By reason of the fact that the records of said stations are lacking in the observations of some days and hours, we are obliged to omit from both tables three entire

months and here and there some isolated days scattered through the different years of that period. This, however, does not in any way change the relation between the monthly, annual, and semiannual averages.

Table 43 contains the average frequency of the winds in Iloílo (though not complete) obtained during the period 1894–1897.

TABLE 41.—*Monthly, annual, and semiannual average of frequency of the winds at the meteorological station of Aparri (north of Luzón): 1886–1895.*

MONTH.	N. NNW.	NW. WNW.	W. WSW.	SW. SSW.	S. SSE.	SE. ESE.	E. ENE.	NE. NNE.	Calm.	Total observations.
January	11.3	3.5	0.8	1.9	9.1	14.4	46.6	75.7	20.3	1,836
February	12.3	4.8	2.2	4.5	9.4	11.9	38.7	65.9	19.5	1,692
March	15.2	4.3	1.4	6.5	13.6	13.8	33.0	74.6	21.2	1,836
April	18.0	7.3	2.9	4.2	19.7	13.7	25.0	64.6	24.6	1,800
May	25.2	10.4	4.2	8.9	20.0	15.3	20.2	51.9	25.8	1,638
June	19.7	8.1	5.8	22.4	34.8	18.1	11.7	36.4	23.0	1,620
July	28.7	10.9	7.4	25.0	29.8	11.8	7.2	35.6	26.2	1,644
August	24.5	12.9	7.4	33.9	25.7	11.1	5.2	35.4	26.9	1,830
September	25.1	17.0	8.7	25.2	12.9	10.8	9.2	39.9	31.2	1,620
October	16.2	9.1	3.5	9.1	8.4	8.9	25.8	71.1	29.1	1,812
November	6.0	3.1	1.5	3.4	3.4	10.0	44.5	87.5	20.6	1,800
December	5.9	2.5	0.5	4.0	5.9	9.2	45.7	89.2	20.1	1,830
Average	17.3	7.8	3.9	12.4	16.1	12.4	26.1	60.7	24.0	.....
Average, November to May, inclusive	13.4	5.1	1.9	4.8	11.6	12.6	36.2	72.8	21.7	.....
Average, June to October, inclusive	22.8	11.6	6.6	23.1	22.3	12.1	11.8	43.7	27.3	.....

TABLE 42.—*Monthly, annual, and semiannual average of frequency of the winds at the meteorological station of Albay (south of Luzón): 1886–1895.*

MONTH.	N. NNW.	NW. WNW.	W. WSW.	SW. SSW.	S. SSE.	SE. ESE.	E. ENE.	NE. NNE.	Calm.	Total observations.
January	2.1	0.1	0.1	0.0	0.0	0.9	68.9	80.8	32.6	1,668
February	2.9	0.0	6.9	7.4	0.1	1.5	67.1	59.2	22.9	1,680
March	1.0	1.1	11.6	4.4	6.5	3.9	80.3	39.8	35.0	1,836
April	0.4	0.1	1.6	0.8	4.8	4.9	86.2	26.3	49.5	1,746
May	1.0	1.0	2.5	5.9	7.3	5.0	78.4	11.0	70.3	1,824
June	1.9	5.3	11.0	14.1	7.1	5.5	49.5	12.2	67.4	1,740
July	1.8	6.1	27.7	35.7	8.9	7.6	17.8	7.4	69.8	1,644
August	6.0	11.2	21.2	38.6	6.3	8.2	18.5	7.0	66.6	1,836
September	4.8	9.1	27.5	47.4	7.2	3.2	7.9	8.2	59.3	1,746
October	5.1	1.7	8.6	16.1	4.9	4.0	36.1	38.8	66.5	1,818
November	5.3	1.3	2.8	6.4	1.4	4.0	47.6	63.2	45.9	1,602
December	4.3	0.2	1.7	10.5	1.8	1.8	48.8	77.8	35.5	1,824
Average	3.1	3.1	10.3	15.6	4.7	4.2	50.6	36.0	51.8	.....
Average, November to May, inclusive	2.4	0.5	3.9	5.1	4.4	3.1	68.2	51.1	41.7	.....
Average, June to October, inclusive	3.9	6.7	19.2	30.4	6.9	5.7	26.0	14.7	65.9	.....

TABLE 43.—*Monthly, annual, and semiannual average of frequency of the winds at the agricultural station of Iloílo: 1894–1897.*

MONTH.	N. NNW.	NW. WNW.	W. WSW.	SW. SSW.	S. SSE.	SE. ESE.	E. ENE.	NE. NNE.	Calm.	Total observations.
January	47.0	18.3	1.3	0.0	0.3	0.0	13.7	40.3	3.0	372
February	41.3	21.0	1.3	0.3	0.0	0.0	6.5	41.5	3.8	452
March	38.3	16.0	2.0	0.0	0.7	0.3	9.0	53.0	4.7	372
April	30.3	18.8	4.3	2.3	2.5	3.5	14.3	38.8	5.5	480
May	9.3	8.0	13.5	22.0	17.5	19.0	9.3	14.0	11.5	496
June	10.8	6.5	15.0	20.8	14.8	13.8	12.8	15.5	10.3	480
July	5.5	2.8	16.0	28.3	24.5	23.3	12.0	6.0	5.8	496
August	3.5	1.5	13.5	45.8	33.5	11.3	5.8	4.3	5.0	496
September	6.3	1.3	5.3	43.5	36.5	14.8	6.3	4.0	2.5	480
October	21.3	9.3	5.3	16.3	13.7	8.7	9.7	22.7	17.0	372
November	36.8	7.8	4.8	4.5	2.0	4.3	12.5	41.5	6.0	480
December	42.0	4.0	2.3	1.3	0.8	0.5	9.5	61.3	2.5	496
Average	24.4	9.6	7.1	15.4	12.2	8.3	10.1	28.6	6.5	.....
Average, November to May, inclusive	35.0	13.4	4.2	4.3	3.4	3.9	10.7	41.5	5.3	.....
Average, June to October, inclusive	9.5	4.3	4.0	30.9	24.5	14.4	9.3	10.5	8.1	.....

From these tables we find:

First. That at the station in Aparri the winds most prevalent, even in the months from July to September, are those from north to east, and those least prevalent are from the west.

Second. That at the station in Albay the most prevalent winds during the year are those from north to east, with the exception of only three months—July, August, and September—in which the greater frequency prevails in those of the third quadrant. During the months of March, April, May, and June there is to be seen a marked inclination in the prevailing winds from the east, corresponding to east to east-northeast, the maximum monthly frequency, so that in other months when winds of the first quadrant prevail those from northeast and north-northeast give a higher degree of prevalency.

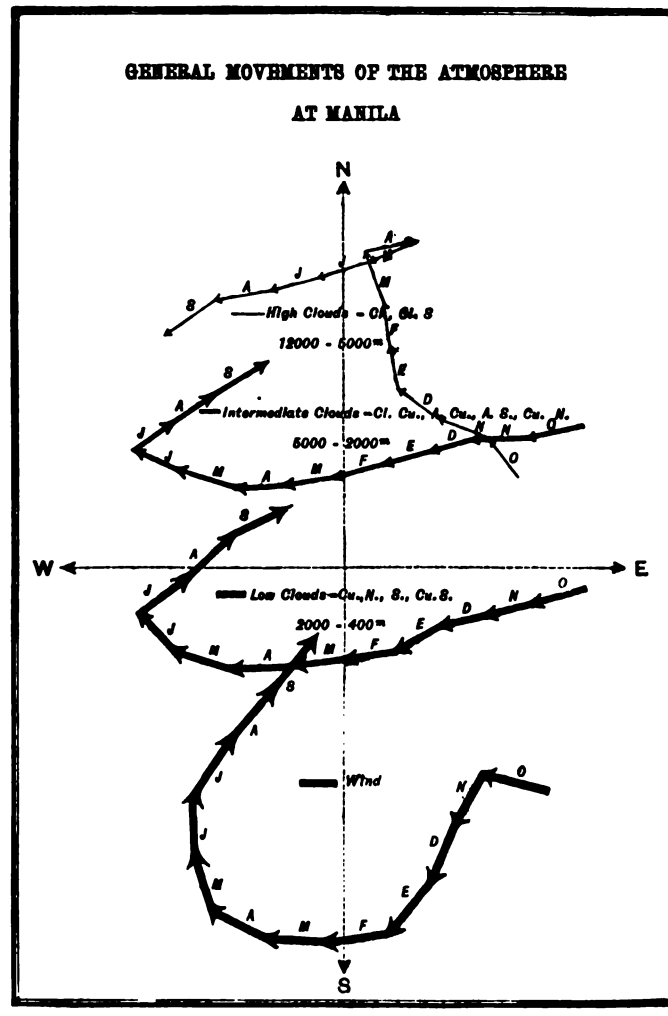
Third. In Iloílo the north winds prevail in the months of January, February, March, April, October, November, and December, and winds from the south, principally those composed of south and southwest winds, prevail in the other months—May, June, July, August, and September.

HIGHER CURRENTS OF AIR.

A practical result of the observations of clouds has been the determination of their medial direction. For this purpose observations were made in the observatory in Manila from the year 1890 to 1897, the practical result[1] of which is shown in Table 44, which we do not

[1]See work entitled "Clouds in the Philippine Archipelago."

PLATE XII.


GENERAL MOVEMENTS OF THE ATMOSPHERE
AT MANILA
N
S
E
W
High Clouds - Ci., Ci. S
12000 - 6000m
Intermediate Clouds - Ci. Cu., A. Cu., A. S., Cu. N.
5000 - 2000m
Low Clouds - Cu. N., S., Cu. S.
2000 - 400m
Wind

doubt will be of great practical utility in ascertaining the existence, location, and direction of cyclonic vortices by means of the direction of the clouds.[1]

TABLE 44.—*General movement of the atmosphere in Manila.*

HIGH CLOUDS (BETWEEN 19,000 AND 5,000 METERS)—CIRRUS AND CIRRO-STRATUS.

MONTH.	From SE. to NW.	From S. to N.	From SW. to NE.	From W. to E.	From NW. to SE.	From N. to S.	From NE. to SW.	From E. to W.	Total.
January	0.0038	0.0044	0.0041	0.0006	.....	0.0004	0.0002	0.0017	0.0152
February	0.0020	0.0023	0.0026	0.0008	.....	0.0003	0.0015	0.0010	0.0105
March	0.0028	0.0037	0.0005	0.0006	0.0003	0.0001	0.0001	0.0009	0.0090
April	0.0007	0.0024	0.0027	0.0058	0.0016	0.0018	0.0014	0.0003	0.0167
May	0.0032	0.0006	0.0022	0.0021	0.0023	0.0012	0.0048	0.0057	0.0221
June	0.0020	0.0017	0.0018	0.0026	0.0008	0.0024	0.0059	0.0094	0.0266
July	0.0020	0.0007	0.0013	0.0015	0.0011	0.0005	0.0087	0.0139	0.0297
August	0.0052	0.0012	0.0012	0.0008	0.0001	0.0020	0.0100	0.0173	0.0378
September	0.0016	0.0007	0.0010	0.0003	0.0017	0.0019	0.0105	0.0093	0.0270
October	0.0047	0.0001	0.0021	0.0002	0.0015	0.0003	0.0034	0.0095	0.0218
November	0.0054	0.0027	0.0013	0.0011	0.0007	0.0008	0.0032	0.0064	0.0216
December	0.0039	0.0023	0.0023	0.0018	0.0002	0.0004	0.0012	0.0036	0.0157
Year	0.0373	0.0228	0.0231	0.0182	0.0103	0.0121	0.0509	0.0790	0.2537

INTERMEDIAL CLOUDS (BETWEEN 5,000 AND 2,000 METERS)—HIGH CUMULUS, CIRRO-CUMULUS, HIGH STRATUS, CUMULO-NIMBUS.

MONTH.	From SE. to NE.	From S. to N.	From SE. to NE.	From W. to E.	From W. to SE.	From N. to S.	From NE. to SW.	From E. to W.	Total.
January	0.0011	0.0002	0.0006	0.0001	.....	0.0007	0.0074	0.0191	0.0282
February	0.0004	.....	0.0001	.....	.....	0.0003	0.0037	0.0138	0.0183
March	0.0011	0.0002	0.0004	0.0003	.....	0.0001	0.0039	0.0166	0.0226
April	0.0013	0.0007	0.0003	0.0003	0.0005	0.0007	0.0020	0.0108	0.0166
May	0.0028	0.0006	0.0009	0.0004	0.0005	0.0004	0.0013	0.0064	0.0133
June	0.0037	0.0015	0.0017	0.0014	0.0008	0.0002	0.0002	0.0085	0.0180
July	0.0012	0.0012	0.0047	0.0044	0.0013	0.0004	0.0020	0.0026	0.0178
August	0.0015	0.0018	0.0047	0.0058	0.0011	0.0007	0.0015	0.0035	0.0206
September	0.0007	0.0005	0.0053	0.0040	0.0007	0.0009	0.0007	0.0010	0.0138
October	0.0023	0.0003	0.0022	0.0013	0.0016	0.0003	0.0056	0.0071	0.0207
November	0.0034	0.0011	0.0006	0.0008	0.0004	0.0005	0.0040	0.0153	0.0261
December	0.0039	0.0006	.....	0.0001	.....	0.0002	0.0073	0.0167	0.0288
Year	0.0234	0.0087	0.0215	0.0179	0.0069	0.0054	0.0396	0.1214	0.2448

LOW CLOUDS (BETWEEN 2,000 AND 200 METERS)—CUMULUS, NIMBUS, STRATUS, CUMULO-STRATUS.

MONTH.	From SE. to NW.	From S. to N.	From SW. to NE.	From W. to E.	From NW. to SE.	From N. to S.	From NE. to SE.	From E. to W.	Total.
January	0.0005	.....	0.0002	.....	.....	0.0002	0.0054	0.0112	0.0175
February	0.0004	.....	0.0001	.....	.....	0.0003	0.0037	0.0119	0.0164
March	0.0014	.....	0.0005	0.0002	.....	.....	0.0027	0.0117	0.0165
April	0.0008	0.0002	0.0003	0.0003	0.0002	0.0001	0.0015	0.0127	0.0161
May	0.0032	0.0011	0.0017	0.0016	0.0006	0.0004	0.0014	0.0082	0.0182
June	0.0043	0.0007	0.0035	0.0038	0.0002	0.0002	0.0003	0.0071	0.0201
July	0.0022	0.0004	0.0064	0.0059	0.0011	0.0010	0.0007	0.0033	0.0210
August	0.0019	0.0006	0.0047	0.0058	0.0011	0.0007	0.0015	0.0035	0.0198
September	0.0010	0.0013	0.0083	0.0089	0.0018	0.0012	0.0010	0.0020	0.0255
October	0.0006	0.0001	0.0017	0.0019	0.0009	0.0007	0.0037	0.0087	0.0183
November	0.0018	0.0010	0.0008	0.0008	0.0009	0.0007	0.0045	0.0109	0.0214
December	0.0020	.....	.....	.....	.....	0.0003	0.0044	0.0100	0.0167
Year	0.0201	0.0054	0.0282	0.0292	0.0068	0.0058	0.0308	0.1012	0.2275

[1] "Clouds in the Philippine Archipelago," Ch. VIII, par. 8.

Employing the form used by Lambert, we have deduced from the outlines of the preceding tables the results which, at length, farther on, we express in regard to each month of the year. Adding the resultant direction of the winds, which were given in the preceding section, we have so arranged them that they can be readily compared with the changes which verify themselves in the atmosphere, from the surface of the sea to the regions of high temperature.

MONTH.	High clouds.	Intermedial clouds.	Low clouds.	Winds.
	° ′	° ′	° ′	° ′
January	S. 06–00 E.	N. 79–34 E.	W. 76–59 E.	N. 41–07 E.
February	S. 11–20 E.	N. 78–04 E.	N. 80–08 E.	N. 83–13 E.
March	S. 17–29 E.	N. 83–18 E.	N. 87–04 E.	S. 84–18 E.
April	S. 82–54 W.	N. 86–25 E.	N. 88–40 E.	S. 68–31 E.
May	N. 73–29 E.	S. 78–59 E.	S. 71–32 E.	S. 16–55 E.
June	N. 75–23 E.	S. 61–15 E.	S. 40–09 E.	S. 0–41 W.
July	N. 76–28 E.	S. 54–58 W.	S. 54–15 W.	S. 34–28 W.
August	N. 83–53 E.	S. 53–45 W.	S. 55–38 W.	S. 40–48 W.
September	N. 62–58 E.	S. 66–07 W.	S. 69–26 W.	S. 39–41 W.
October	S. 47–25 E.	N. 77–36 E.	N. 74–25 E.	S. 75–32 E.
November	S. 68–44 E.	S. 89–04 E.	N. 82–49 E.	N. 27–45 E.
December	S. 55–29 E.	N. 85–20 E.	N. 82–10 E.	N. 24–13 E.

These results, which only refer to the currents observed in Manila, can be taken, however, as average representations of the general direction of the atmospheric movements, at least as to the central parts of the archipelago; and mariners may consider them as an expression of the dominating direction of the different aerial currents, not only in the interinsular seas, but those comprehended in the zone of the archipelago.

For the convenience of the observers, and especially of mariners touching at these coasts, we represent in Plate XII the verified average direction of currents corresponding to the different regions of the atmosphere.

In said plate, we begin the series of months with October, for the reason that in September and October the most noted changes in direction take place.

Referring to each one of the months, the directions are to be indicated as to their relation to each other with the cross of interrupted lines, in order to understand its position. We give to the numbers found and their graphic representation only provisional averages, because the observations from the year 1890, having been made by a number of persons and it also being very difficult to obtain exact information of some facts, it is not strange that some observations appear mixed up and that some groups are confounded with others, resulting in an alteration of the averages. The brusque changes in the direction of the high clouds of March and April are indeed notable, especially when we consider the fact that during the month of April the false rumors are not so abundant as in May, June, July, August,

and September; nor are there high hurricanes on the China sea, which would be the only two causes that could falsify the normal direction of the clouds. This is not the place to discuss the cause of these general movements of the atmosphere of Manila. With special reference to the greater convenience of the observer, we have calculated the result of the general movements, grouping the months in conformity to the division of the year made with regard to the hurricanes. The result we publish in the following continuation of Table 44:

TABLE 44.—*General movement of the atmosphere in Manila*—Continued.

	From SE. to NW.	From S. to N.	From SW. to NE.	From W. to E.	From NW. to SE.	From N. to S.	From NE. to SW.	From E. to W.	Total.
HIGH CLOUDS.									
Group I	0.0125	0.0107	0.0095	0.0038	0.0005	0.0012	0.0030	0.0072	0.0484
Group II	0.0079	0.0054	0.0080	0.0130	0.0058	0.0059	0.0208	0.0293	0.0961
Group III	0.0159	0.0046	0.0056	0.0024	0.0040	0.0050	0.0271	0.0425	0.1071
Total.	0.0363	0.0207	0.0231	0.0192	0.0103	0.0121	0.0509	0.0790	0.2516
INTERMEDIAL CLOUDS.									
Group I	0.0065	0.0010	0.0001	0.0004	.....	0.0013	0.0223	0.0662	0.0978
Group II	0.0090	0.0040	0.0076	0.0065	0.0031	0.0017	0.0055	0.0283	0.0657
Group III	0.0079	0.0037	0.0128	0.0119	0.0038	0.0024	0.0118	0.0279	0.0822
Total.	0.0234	0.0087	0.0205	0.0188	0.0069	0.0054	0.0396	0.1224	0.2457
LOW CLOUDS.									
Group I	0.0043	.....	0.0008	0.0002	.....	.....	0.0162	0.0448	0.0663
Group II	0.0105	0.0024	0.0119	0.0116	0.0021	0.0017	0.0059	0.0396	0.0857
Group III	0.0053	0.0044	0.0211	0.0225	0.0049	0.0033	0.0067	0.0281	0.0963
Total.	0.0201	0.0068	0.0338	0.0343	0.0070	0.0050	0.0288	0.1125	0.2483

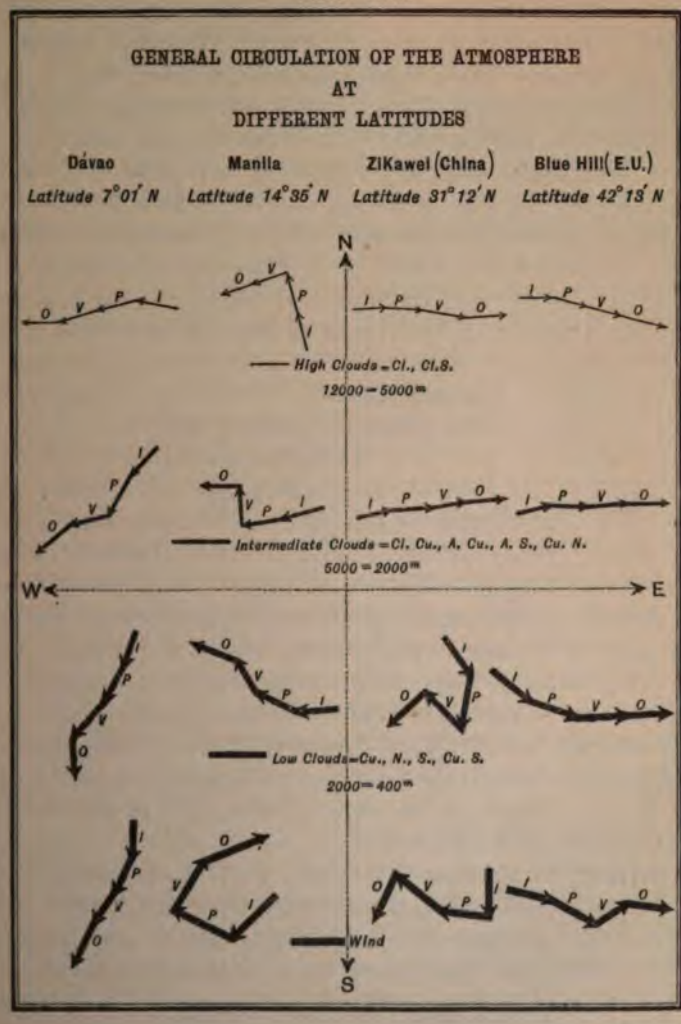
Applying the formula of Lambert there result for each group the following mean directions:

	High clouds.	Intermedial clouds.	Low clouds.
Group I	S. 4° 51′ E.	N. 73° 28′ E.	N. 83° 51′ E.
Group II	N. 82° 28′ E.	S. 80° 44′ E.	S. 76° 56′ E.
Group III	N. 74° 41′ E.	S. 37° 51′ W.	S. 46° 23′ W.

Finally, in order to complete this investigation, on Plate XIII we have traced another graphic outline in comparison with the general currents of the atmosphere at four different latitudes—Dávao, Manila, Zikawei (China), and Blue Hill (Massachusetts). It is sufficient to note that the direction of the high clouds during the summer, as regards Manila, differs little from the observed direction in Jamaica[1] during

[1] See publication "Clouds and Cloud-Drifts in Jamaica," by Hall, Jamaica, 1896.

PLATE XIII.


GENERAL CIRCULATION OF THE ATMOSPHERE
AT
DIFFERENT LATITUDES
Dávao
Latitude 7°01′ N
Manila
Latitude 14°35′ N
ZiKawei (China)
Latitude 31°12′ N
Blue Hill (E.U.)
Latitude 42°13′ N
N
High Clouds = Ci., Ci.S.
12000 = 5000m
Intermediate Clouds = Ci. Cu., A. Cu., A. S., Cu. N.
5000 = 2000m
W
E
Low Clouds = Cu., N., S., Cu. S.
2000 = 400m
Wind
S

the summer. It also differs very little from the direction of our intermedials observed in both tropical stations. The direction of the low clouds differ more from the fact that they are influenced by the tornadoes.

We have taken the directions observed at Zikawei and Blue Hill from an interesting book written by Father Marc Dechevrens, of the Jesuit order.[1] The observations regarding Dávao are the fruit of the patient work of the Jesuit missionary, Father Baltassar Ferrer, who, in spite of the arduous duties of his apostolic ministry, found time to devote to science, rendering an invaluable service to the same by his notes, since the observations made by him are the only ones up to date which have been made with any regularity in a location so near the equator as Dávao. It will be noted that the direction in the high clouds at Manila is always to the east, while the direction of the highest latitude is always to the west. It is especially interesting to call attention to the direction of the clouds at Dávao, which are exactly opposite to the direction of the clouds at Zikawei and Blue Hill. It appears that this change, noted most near the tropical line, has been observed by Poey in Habana (Lat. N. 23° 9′). It is important to investigate in which zone the principal currents begin to be occidental.

It is to be regretted that the observations made in the observatory at Hongkong (Lat. 22° 18′) are not sufficiently full to clear up this point. Besides this, during the time the sun is in the southern hemisphere, or rather, it may be said, during October, November, December, January, February, and March, currents of cirri from the second quadrant prevail, and during the other months of the year those of the first quadrant. We content ourselves with these indications, because it is not our general purpose to investigate here the causes of the diverse circulation of the zones in the different latitudes.

Having ascertained the normal direction of the diverse elements of the atmosphere, it remains for the observer to distinguish with greater accuracy whatever concerns the value of the signs of the hurricanes taken from the direction of the clouds.

In this manner the observer can utilize the indications of the directions of the clouds when the normal directions are known, and the provisions of the atmospheric disturbances can be seen best in the publication "Philippine Hurricanes and Cyclones," page 156.

EXTRAORDINARY AIR CURRENTS.

Two classes of atmospheric changes may be distinguished in the Philippine archipelago and the seas which surround it, due to more or less developed centers of low pressure. One we simply indicate under the general name of depressions, and the other we call baguíos or

[1] "Mouvements des diverses couches de l'atmosphère," by Marc Dechevrens, S. J., Rome, 1896. (Extract from the records of the Pontific Academy of Nuovi Lincei.)

Philippine cyclones, the latter, as is known, not falling short of the cyclones of the Indian ocean nor of the hurricanes of the Atlantic.

Although it is our intention to speak in this section somewhat at length concerning the baguíos, both because of their frequency in this archipelago and because of their terrible effect on vessels which navigate these seas, we do not believe it inappropriate to say, by way of preamble, a few words concerning the first class of atmospheric changes which we have just indicated.

For greater clearness we consider these depressions divided into two groups: one of them originating in low latitudes between 4° and 12° north latitude, and the other formed in a higher latitude, probably between 16° and 22°.

The first are nothing more than extended areas of low pressure which extend in a fairly uniform manner over immense regions, and occur principally in the months of December, January, February, and March. In the majority of cases it is very difficult to distinguish in these depressions a true movement of transference, as also to accurately locate the center before the beginning of the barometric descent or the lowest barometric pressure, which is often observed at the same time in all the archipelago, and probably even in part of the Pacific and the China sea. This minimum reading of the barometer is generally in the Visayan Islands and Mindanao—that is, in the southern region of the Philippines—and is 2 or 3 mm. lower than normal.

The immediate effect of this kind of atmospheric disturbance is manifested by brisk winds from the first quadrant and rains of greater or less abundance in the Visayan Islands and Mindanao, which frequently extend as far as the provinces of southern Luzón. Whenever it has been possible to locate the center of any one of these depressions between the Visayas and Mindanao, it has generally been observed that in the southern part of the region moderate or brisk winds from S. to SW. prevail.

Although the data at our disposition is at present very scanty, it would appear that some of these wide centers of low pressure, after having crossed the southern part of the archipelago as depressions such as we have just described, by a movement of transference, better defined in some cases than in others, acquire, perhaps, a greater development in the China sea, being converted into genuine cyclone centers.

The other depressions which, as already indicated, usually form in higher latitudes, are also wide areas of low pressure prolonged from E. to W., or from ENE. to WSW., and which usually remain for some days either to the northwest of Manila, between the northwest of Luzón and the south of China, or in the Pacific, toward the NE. or

NNE. of Manila; or perhaps they also extend themselves along some part of the China sea and the Pacific, between the north of Luzón, the south of China, Formosa, and the Riu Kiu Islands. These depressions occur in the months in which baguíos are most frequent, especially in June and July.

Toward the north of these wide centers of low pressure brisk winds from N. to E. prevail, and also to the south of these brisk winds from S. to SW. In Manila, winds neither brisk nor light prevail from SSE. and S. when the depression lies to the NW. in the China sea, and winds between brisk and strong prevail from S. to SW., when it is situated more to the N. or to the NNE. and NE. in the Pacific.

In the latter case these winds from the third quadrant, together with the squalls which accompany them at intervals for several days, constitute the phenomenon known to the natives by the name of colla.[1] These depressions sometimes give place to the formation of genuine cyclone centers.

Having given these general ideas concerning depressions of minor importance we pass on to discuss, as briefly and clearly as possible, part of much that might be said concerning true and typical cyclones, possessing the two movements of rotation and transference, which are known in the Philippines under the name of baguíos, and under the name of typhoons in the China sea.

Baguíos or cyclones.—It is of especial interest and practical value to determine the distribution of baguíos over the different months of the year, in order to ascertain in what month they occur with greatest frequency and in what months they do not occur. For this purpose those baguíos are included which have appeared in the archipelago, either crossing it or passing through it for a greater or less distance, and whose trajectory it has been possible to discover.[2] There are 397 of these baguíos, whose distribution, by month and year, can be seen from the following table:

[1] This same phenomenon is at times produced by two typhoons when they move with great slowness in the Pacific to the NE. or NNE. of Manila, or when they follow each other almost without interruption in the Pacific itself.

[2] Observation begins with the year 1880, as this was the first year in which the observatory sent notices of typhoons to the neighboring colony of Hongkong upon the establishment of telegraphic communication.

PLATE XIV.

MONTHLY DISTRIBUTION OF THE BAGUIOS
OR CYCLONES IN THE FAR EAST
1880 - 1898

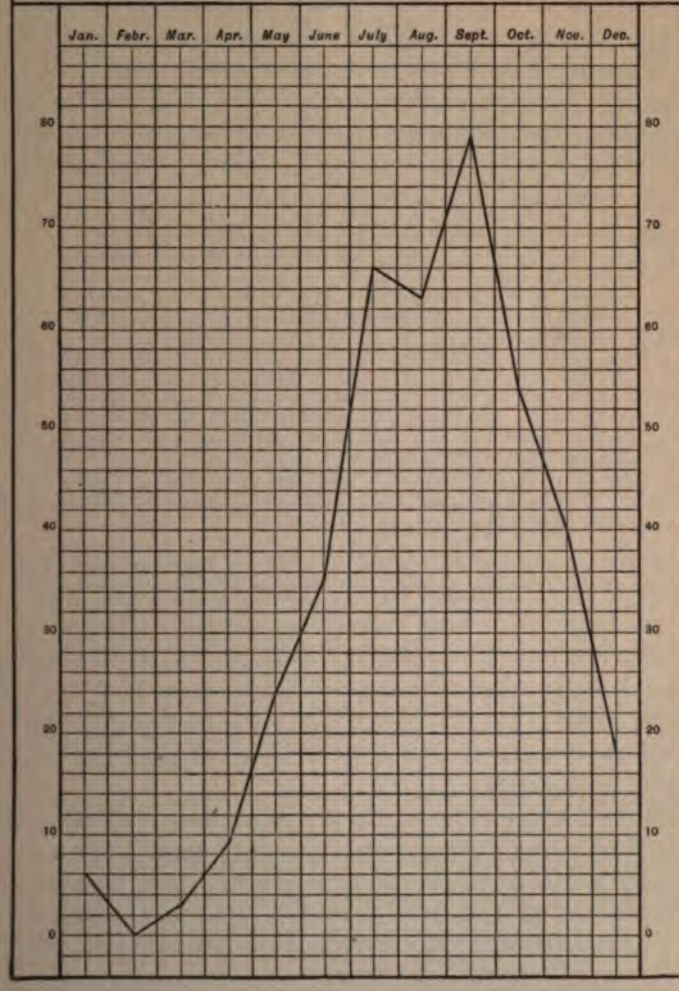


TABLE 45.—*Monthly and yearly distribution of baguíos: 1880–1898.*

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1880	.....	.....	.....	.....	.....	.....	2	4	2	2	1	.....	11
1881	.....	.....	.....	.....	2	1	3	4	4	3	3	1	21
1882	.....	.....	.....	1	.....	.....	3	.....	2	2	1	2	11
1883	.....	.....	1	1	3	1	3	4	4	4	1	.....	22
1884	1	.....	.....	.....	2	1	4	5	4	.....	2	2	21
1885	.....	.....	.....	1	.....	2	2	2	1	1	1	1	11
1886	.....	.....	.....	1	1	2	.....	3	4	3	1	1	16
1887	.....	.....	1	3	3	1	5	2	7	3	3	.....	28
1888	.....	.....	.....	1	.....	2	4	3	3	1	1	1	16
1889	.....	.....	.....	.....	.....	.....	2	3	2	4	1	2	14
1890	1	.....	.....	.....	1	5	4	2	7	6	1	.....	27
1891	.....	.....	.....	1	2	2	7	5	6	.....	4	1	28
1892	1	.....	.....	.....	.....	3	4	4	5	2	3	2	24
1893	2	.....	.....	.....	2	1	3	4	6	3	2	1	24
1894	.....	.....	.....	.....	4	3	5	3	5	5	6	3	34
1895	1	.....	.....	.....	1	4	2	3	5	3	5	.....	24
1896	.....	.....	.....	.....	1	2	4	4	5	4	.....	.....	20
1897	.....	.....	.....	.....	.....	2	6	2	3	5	2	.....	20
1898	.....	.....	1	.....	2	3	3	6	4	3	2	1	25
Total	6	.....	3	9	24	35	66	63	79	54	40	18	397
Average	0.3	.....	0.2	0.5	1.3	1.8	3.5	3.3	4.2	2.8	2.1	0.9	20.9
Per cent	1	.....	1	2	6	9	17	16	20	14	10	4	.....

As will be seen, not one of these 397 baguíos which have been registered from 1880 to 1898 has been observed in the month of February, and only 3 in the month of March. Their frequency then increases from April, when 9 occurred, to July, when 66 occurred. There is then a slight decrease for the month of August, and the maximum of 79 is reached in September, thus giving a yearly average of 4.2 for this month. From October the number gradually diminishes up to January, when but 6 are recorded.

Taking the average of the total number of baguíos observed during the nineteen years included in the previous table, we find a yearly average of nearly 21. This average would be greater if we should include only the last two years, as, on account of more available data and better methods of observation, it has been more difficult for any typhoon to occur in these seas without being recorded. This was not true of the first few years, because methods of securing information were much more defective.

In confirmation of this it is sufficient to say that since the year 1892, when the Manila observatory began to receive monthly reports of daily observations taken on the island of Guam (Mariana Islands), we have been able to record various cyclones, as, for example, three for the month of February, 1895,[1] and one for the month of April, 1899,[2] which

[1] A brief account of these baguíos is given in the meteorological review in the observatory monthly bulletin for November, 1895. The last of these, which occurred in the Marianas the 20th, touched the southern part of the port of San Luis de Apra, where the barometer fell 22 mm. in two hours and ten minutes, the lowest reading being 730 mm. The wind blew a hurricane from NNW. and N. to NE. and SE., causing great damage in the town. The change from NE. to SE. was observed about half an hour.

[2] This baguío was felt in Guam the 25th and 26th. For the observations concerning it we are indebted to the generosity of Mr. Stovell, captain of the steamer *Nanshan*, which was anchored there at that time. According to these the barometer reached its lowest reading of 741 mm. at 4 p. m. on the 25th, and the winds, having a velocity of 8, 9, and 10, according to Beaufort's scale, were successively from E. to SE., S., and SW., and were accompanied by strong squalls. This tempest moved around the west of Guam without touching the Philippine archipelago. The movement of this

passed near that island on the south and west in the Pacific without coming near the Philippines, and concerning which we would have had no information if it had not been for these reports.

Again, in the same meteorological review of the monthly bulletin of the observatory for the years 1880, 1881, and 1882, we find various phenomena described for which we could not then give a satisfactory explanation, but which we now know take place whenever a cyclone occurs at some distance from the archipelago, especially in the vast extent of the Pacific ocean east and northeast of Luzón. Such are, for example, the winds from the southwest, which blow during certain days in the months of April and May, and which are accompanied with frequent showers and squalls. This happened among other cases which we might cite during the last ten days of April, 1880, and May, 1882, during which months no baguío was recorded, not because one might not have occurred, but because at that time we did not have the same facilities as at present for studying and tracing their paths.

In view of this, taking the baguíos registered during the last nine years separately—that is to say, from the period 1890 to 1898—we find an average of 25 baguíos for each year, as the average of the 226 that were registered during these nine years is 25.11.

Taking as a foundation the 397 baguíos registered during the nineteen years from 1880 to 1898, we shall consider in this paragraph their relative distance with respect to Manila. This we believe will be both of interest and utility. For this purpose we have divided these baguíos into four groups, according to their minimum distance from the capital of the archipelago, as follows: First group, less than 10 miles; second, from 10 to 60 miles; third, from 60 to 120 miles; fourth, more than 120 miles.

Thus grouped, these baguíos are distributed throughout the various months of the year as seen in the following table:

TABLE 46.—*Minimum distance with respect to Manila of the 397 baguíos observed in the period 1880–1898.*

DISTANCE (MINIMUM).	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
0 to 10 miles	.....	.....	.....	.....	1	.....	.....	.....	1	1	3	.....	6
10 to 60 miles	.....	.....	.....	.....	6	1	2	2	7	6	3	1	28
60 to 120 miles	.....	.....	1	1	2	3	4	4	5	9	3	4	36
120 miles and over	5	.....	2	8	15	31	60	57	66	39	31	13	327

baguío about the island of Guam is indicated not only by what we have just said concerning the change of winds, but also by the maintenance of the barometric pressure during all the 26th at about the same height that it was the afternoon of the 25th. Nevertheless the observations of the 26th and 27th would seem to indicate that it again turned to the N. or NNW., from which point it was not possible to follow its farther course in the Pacific.

From this data it is evident that the months when the baguíos most dangerous to Manila are felt are May, September, October, and November, for in these months there have been registered the 6 baguíos which, during the period 1880 to 1898, crossed the island of Luzón and passed within 10 miles of the capital. Besides of the 28 baguíos which passed within a distance of from 10 to 60 miles of Manila, 22 occurred during the four months mentioned. In July and August, even though the baguíos are inclined toward the west, they usually pass along the higher latitudes, and are more dangerous to the north of Luzón, Formosa, and the coast of China lying between Hongkong and Shanghai. Nevertheless, as rare cases, we should mention certain baguíos which cross the archipelago through the Visayan Islands, or south of Luzón, even in these months. Such was the baguío which on the 1st and 2d of August, 1896, crossed the southern part of the island of Luzón; also that on the 3d and 4th of August, 1897, which crossed the islands of Luzón and Panay.[1]

Baguíos may be divided into five main groups, each one having typical and special characteristics quite worthy of being studied: Those which cross north of Manila; those which cross south of Manila; those which pass east or northeast of the archipelago in the Pacific, but which disappear before reaching these islands (which rarely occurs), or which recurve before crossing the meridian 121° east of Greenwich (approximately the meridian of Manila); those which form in the China sea to the west of the Philippines, and those which recurve in the China sea between the parallels of 10° and 20°, passing first to the south and afterwards to the north of Manila. The characteristics of the baguíos corresponding to each one of these groups are as follows:

1. Those which cross to the north of Manila: These are the baguíos most dangerous to Manila, if they cross the island of Luzón not far from the capital. The winds blow from N. to NW. and from W. to SW., so that the vortex approaches our meridian with gradually increasing intensity; in general, the most violent winds are those from WSW. and SW. After the baguío has crossed to the north in the direction of the China sea the force of the wind gradually decreases, but continues to blow from the SSW. and S., and even from the SE., in those cases where the storm is sufficiently inclined to the west. If the distance of the vortex from Manila is not less than 60 miles, the winds will scarcely reach a greater force than 9 or 10 of the Beaufort scale. If the distance is less than 180 miles the influence of the cyclone usually lasts in Manila not more than two days. If it is situated in

[1] The first of these baguíos is described at length in the work which has just been published, entitled "Typhoons of the Philippine Archipelago and Surrounding Seas, 1895 and 1896," by P. Juan Doyle, subdirector of the observatory. The second is described briefly in the meteorological review of the observatory monthly bulletin for August, 1897.

the higher latitudes, as the vicinity of the Bashi and Balingtán channels, or near the island of Formosa, then, even though the baguío is to the northeast in the Pacific, strong winds from WSW. and SW. quickly appear; these being accompanied by squalls. This bad weather continues for three or four consecutive days.

2. Those which cross to the south of Manila: It is worthy of notice, and all who have lived in Manila for some years undoubtedly have noticed it, that a striking difference is observed when a comparison is made of the influence exerted on Manila by a baguío crossing to the north and that exerted by one crossing to the south, although the minimum distance of both may be the same. The first are felt with much greater intensity than the second; not alone when the distances are equal, but also when the distances of the latter are much less. Generally speaking, it may be said: First, that a baguío which crosses to the north of Manila at a distance of from 60 to 400 miles exercises as much influence upon the capital as one which crosses to the south at a distance of from 10 to 60 miles; second, that those which cross to the north at a distance of from 400 to 700 miles exercise more influence than those which cross to the south at a distance of from 60 to 150 miles. So great is this influence that for baguíos which are more than 400 miles distant, like that of the 6th to the 9th of August, 1897, which crossed the meridian of Manila north of Formosa, it has been necessary in this port to show the second tempest signal; while for those which crossed to the south not more than 120 miles away the winds of the second quadrant rarely, if ever, acquired sufficient force to cause the observatory to display any signal whatever. The causes of these facts we believe to be two: First, that the typhoons which move from W. or WNW. along parallels lower than 15° are generally of great intensity if in the vicinity of the vortex, which is very much reduced in diameter. Those which run farther to the north are in general of much larger dimensions, increasing in size according to the latitude where they occur. Second, that the winds from the NE. and SE., which blow in Manila when a baguío passes through the south, are opposed by great mountain ranges; while those from the WSW. and the SW. strike the Bay of Manila without encountering any obstacle.

3. Those which recurve into the Pacific without crossing the meridian of Manila: The effect of these baguíos in Manila is similar to that produced by those which cross to the north some distance away, with the single difference that the strong wind and wind and rain squalls from the third quadrant continue at times for five or six days. The intensity of these rains is naturally so much greater as the distance

which separates the vortex from the island of Luzón decreases. If this distance is more than 700 miles its influence is scarcely felt in Manila, except for the greater constancy of those winds which blow from the WSW. and SW. These blow even outside of the regular hours for breezes, as happened in the baguío of the 6th to 9th of September, 1897, and that which damaged Kobé the 15th of August, 1900.

4. Those which form in the China sea to the west of the archipelago: These baguíos are those which are felt least in Manila. As a general rule they follow from the point of their formation toward the fourth quadrant, and most commonly toward the NW. or WNW. For this reason they are soon far from the archipelago, and so influence Manila only by means of their showers and mild or brisk breezes from the S. to the SE.

Although not frequent, baguíos are occasionally registered which, forming in the China sea, move to the N. and NE., passing thus to the north of Manila. When this happens their influence is prolonged for some days, the winds veering from SE. to S. and SW. as the vortex advances toward the NE.

5. Those which recurve in the China sea between the parallels 10° and 20°, passing first to the south and afterwards to the north of Manila: The influence of these baguíos, especially if they do not go far into the China sea before recurving, is usually prolonged for six or eight or more days, being accompanied at first with nearly continuous rains and brisk winds, which veer from N. to NE., E. and ESE., while the vortex crosses to the south and passes into the China sea. During this recurve the velocity of the storm usually diminishes notably, rains and brisk breezes continuing at Manila. These breezes from the ESE. veer to the SE. and SSE. very slowly. When, at the end of three, four, or five days, the baguío has completed this recurve, it quickly continues its course to the NNE., NE., or ENE. This change in position of the vortex, if the baguío is not too distant from Manila, is accompanied here by a rapid veering of the winds from the SSE. to the SSW., SW., WSW., and W., these increasing in force until the baguío has a second time crossed the meridian of Manila to the north. To this class belonged the "Gravina" baguío (so called because of the wreck of this merchant vessel near the coast of Zambales) of the 8th to the 17th of May, 1895, and the baguío of Iloílo and Vigan of the 6th to 20th of May, 1896. The vortex of this baguío passed Iloílo during the first part of its parabolic path and touched Vigan, when, after recurving, it crossed the NW. extremity of Luzón, moving to the NE. The paths of these two baguíos and others similar to them can be seen on Plate XXIV.

Knowing thus in general the influence which a baguío may have on Manila, according as it belongs to one or the other of these five groups, it is easy to see that it will be useful to know the months in which the

baguíos of these different groups occur. For this purpose we have prepared the following table:

TABLE 47.—*Monthly distribution of baguíos for the period 1880 to 1898, according to the position of their paths with respect to Manila.*

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Per cent.
North of Manila	.....	.....	.....	.....	3	5	32	26	29	20	6	.....	121	30
South of Manila	4	.....	.....	5	9	5	7	6	6	13	19	11	85	21
East of meridian 121°	2	.....	2	3	6	12	14	24	33	11	11	6	124	31
West of archipelago	.....	.....	.....	1	2	12	13	7	11	10	2	.....	58	15
First south then north of Manila	.....	.....	1	.....	4	1	.....	.....	.....	.....	2	1	9	2

It appears that those baguíos which cross to the north of Manila and those which remain in the Pacific, east of the meridian 121° east of Greenwich, are most frequent. Those which cross to the south of Manila are less frequent, while those formed west of the meridian 121° east of Greenwich are still less frequent. Those baguíos which recurve in the China sea between the parallels 10° and 20°, crossing first to the south and then to the north of Manila, occur, as will be seen in the table, but rarely.

In regard to the monthly distribution of the baguíos of these five groups it is evident, first, that those which cross to the north of Manila are more frequent in the months of September, July, August, and October, though they occur sometimes in the months of November, May, and June, but never during the rest of the year; second, that those which cross to the south are most common in November, October, May, and December, and are rarely seen in April, June, July, August, September, and January; third, that those which recurve into the Pacific to the east of meridian 121° east of Greenwich are very frequent in September, quite frequent in August and July, less so in June, October, and November, and rare in the other months; fourth, that those formed in the China sea to the west of meridian 121° east of Greenwich are fairly frequent from June to October, inclusive, in descending grade through June, July, and August, and ascending from August to October, the maximum being in the months of June and July, this being the so-called typhoon period. Very few have observed them in May, November, and April, and none in the other months; fifth, that of the last group of baguíos but nine have been registered in the period under discussion—one in March, one in June, one in December, two in November, and four in May—they being peculiar, therefore, to this last month. Thus, in the year 1899 we observed a baguío of this group from the 18th to the 28th

of May which first crossed the Visayan Islands, being severely felt in Iloílo and Cebú on the 20th and 21st. It then recurved into the China sea to the south of Hongkong, between the parallels 17° and 20°, and was lost in the Pacific ocean to the north of Formosa. Its path may be seen on Plate XXIV.

The baguíos may be classified in the following form:

- Cyclones formed in the Pacific.
  - Cyclones of the Marianas or Magallanes.
  - Cyclones of Japan.
    - Those which recurve far from the meridian of Manila.
    - Those which recurve near the meridian of Manila before or after crossing it.
  - Cyclones of Formosa.
  - Cyclones of the Philippines.
    - Cyclones of Luzón.
      - Cyclones which cross to the north of Manila.
        - Cyclones which recurve in the interior of Luzón, or in the China sea, not far from the island.
        - Cyclones of China, Tonkin, and Cochin China.
      - Cyclones which cross to the south of Manila.
    - Cyclones of the Visayas and Mindanao.
    - Cyclones which recurve in the China sea between the 10th and 20th parallels north latitude, crossing first to the south and then to the north of Manila.
- Cyclones formed in the China sea.
- Cyclones formed in the Joló sea or the interisland waters south of Luzón.

This classification includes all the cyclones of the extreme East, but it is made principally with reference to Manila, or to the influence exerted on Manila according to the zone of formation and the course of the trajectories.

Of the baguíos here specified, 81 per cent belong to the first main branch of this division, 15 per cent to the second, and only 4 per cent to the third.

Of the typhoons of the Visayas and Mindanao, those formed in the China sea and those formed in the sea south of Luzón, some disappear in the China sea before reaching the continent, while others, greater in number, penetrate the continent in the south of China, in Tonkin, or in Cochin China. Those formed in the China sea very seldom go in the direction of Formosa or Japan. But this is not true of those of the Visayas and Mindanao, which in this case belong to the last of the three groups of baguíos, which we have called Philippine baguíos because they cross these islands.

Of the baguíos formed in the Pacific, the cyclones called those of the Marianas or Magallanes disappear in the Pacific without reaching our archipelago or recurve in such a manner that the second part of their parabolic trajectory does not carry them to Japan nor near it, but rather in the direction of the archipelago of Magallanes; Japanese typhoons include not only those which actually traverse Japan, but also those which, after recurving, pass through the seas of Japan or in the vicinity of that Empire; cyclones of Formosa, Luzón, the Visayas, and Mindanao are all such as traverse said islands, or at least cross

PLATE XV.—CYCLONES OF THE MARIANAS OR MAGALLANES.

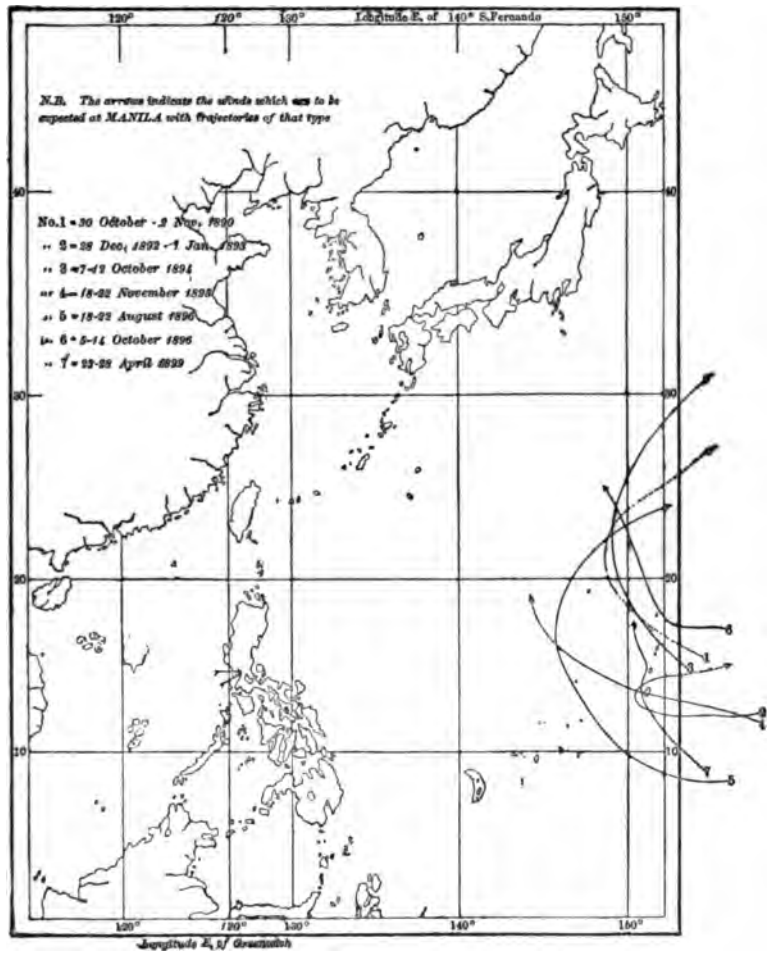


PLATE XVI.—CYCLONES WHICH RECURVE FAR FROM THE MERIDIAN OF MANILA.

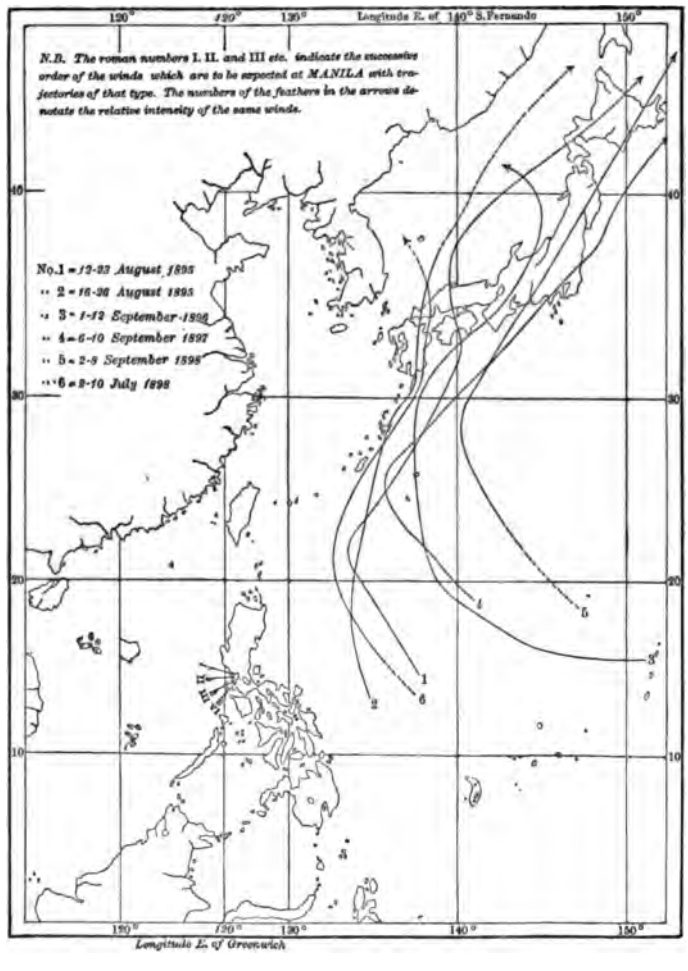


PLATE XVII.—CYCLONES WHICH RECURVE NEAR THE MERIDIAN OF MANILA BEFORE OR AFTER CROSSING IT.

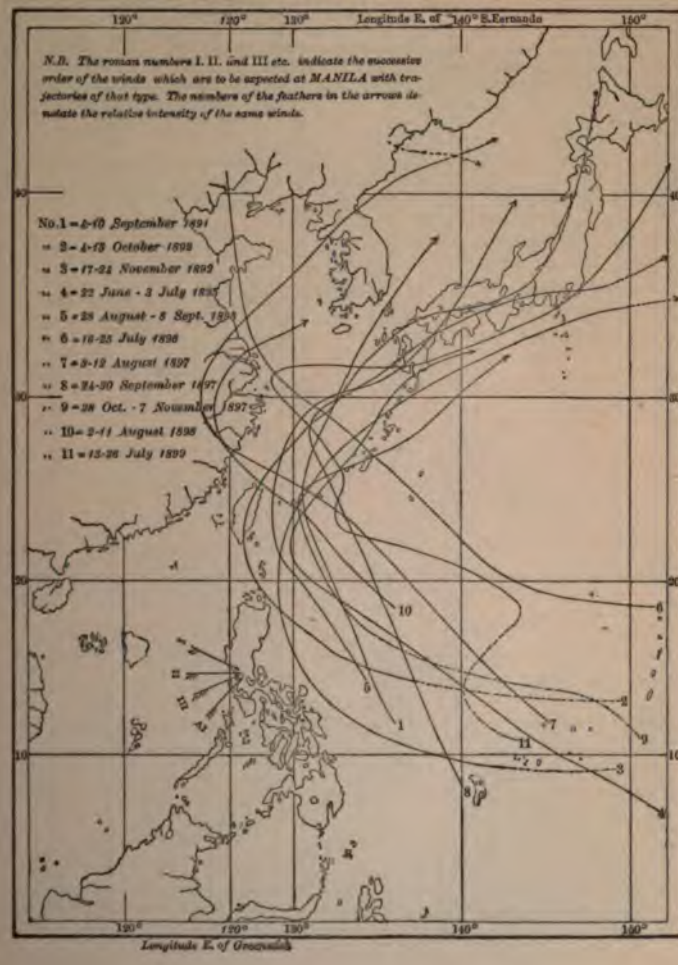


PLATE XVIII.—CYCLONES OF FORMOSA.

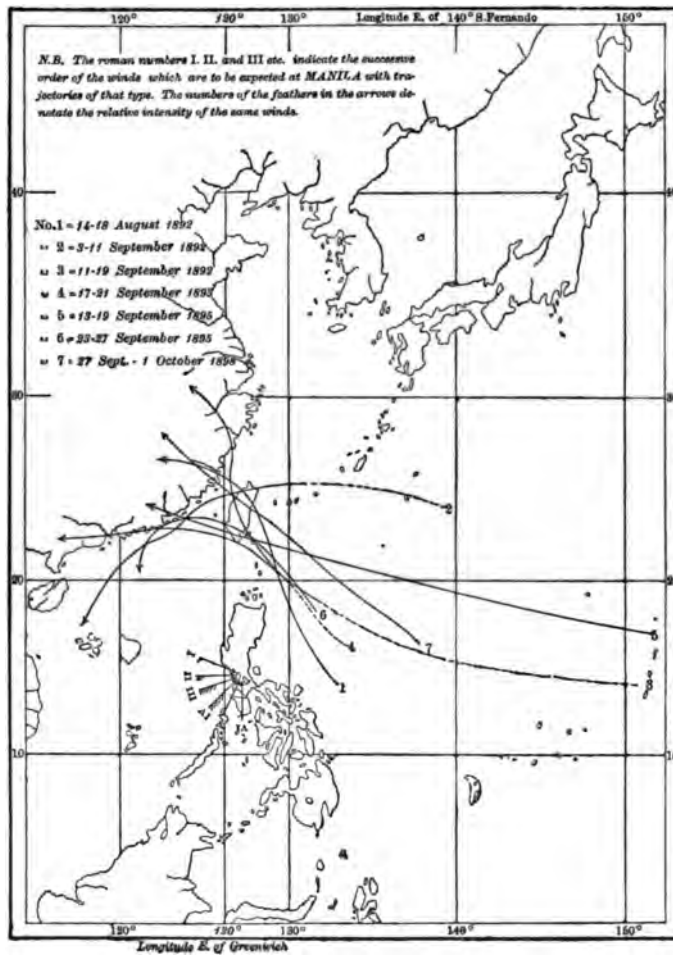


PLATE XIX.—CYCLONES WHICH RECURVE IN THE INTERIOR OF LUZON, OR IN THE CHINA SEA NOT FAR FROM THE ISLAND.

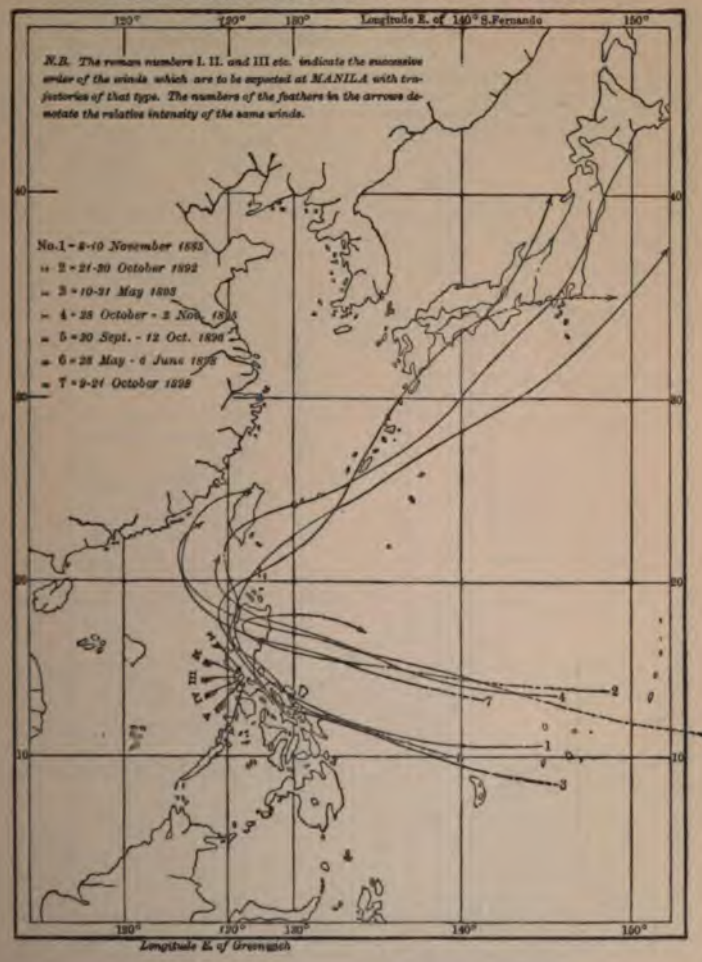


PLATE XX.—CYCLONES OF CHINA, TONKIN, AND COCHIN CHINA.

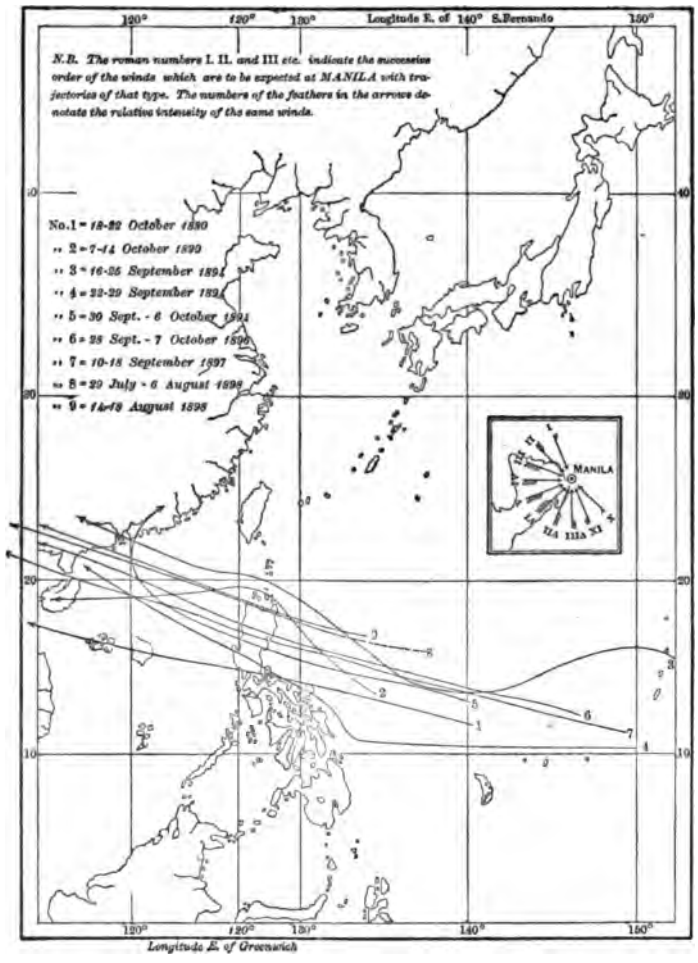


PLATE XXI.—CYCLONES OF CHINA, TONKIN, AND COCHIN CHINA.

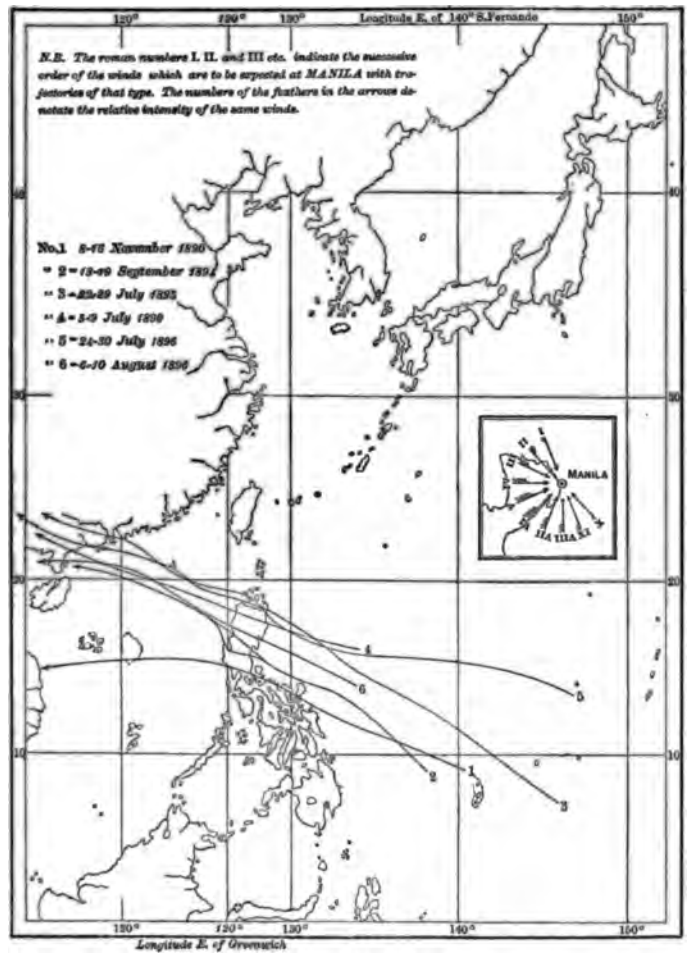


PLATE XXII.—CYCLONES WHICH CROSS TO THE SOUTH OF MANILA.

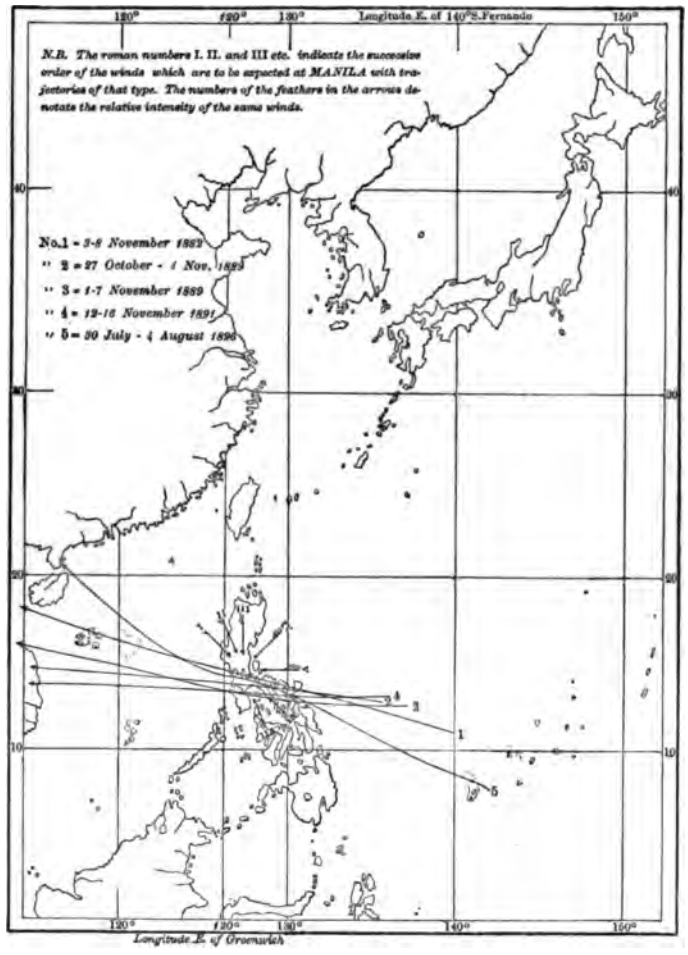


PLATE XXIII.—CYCLONES OF THE VISAYAS AND MINDANAO.

PLATE XXIV.—CYCLONES WHICH RECURVE IN THE CHINA SEA BETWEEN THE 10TH AND 20TH PARALLELS NORTH LATITUDE, CROSSING FIRST TO THE SOUTH AND THEN TO THE NORTH OF MANILA.

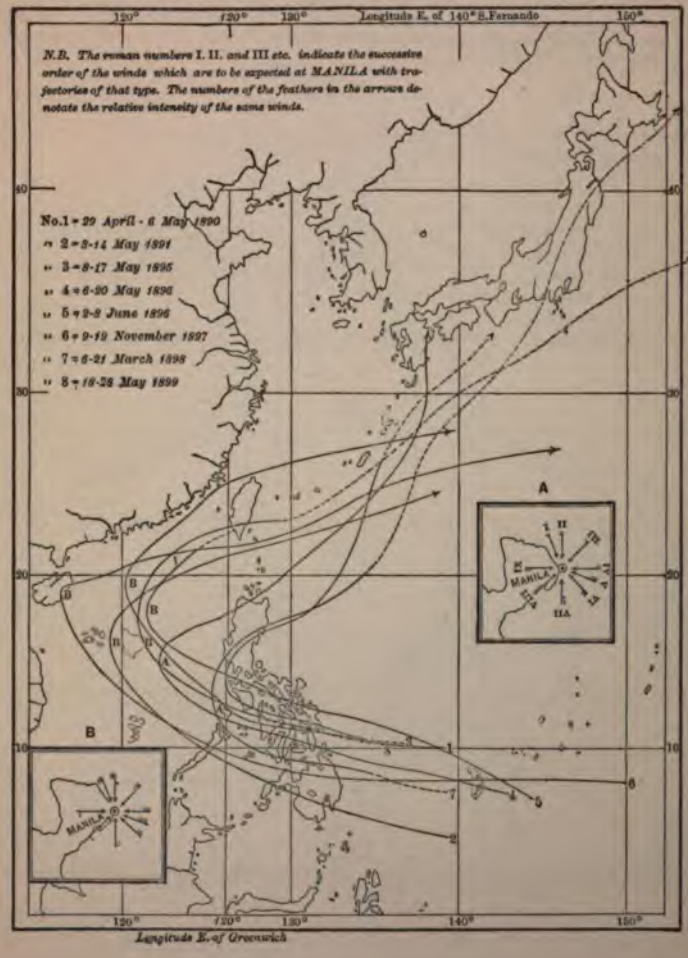


PLATE XXV.—CYCLONES FORMED IN THE CHINA SEA.

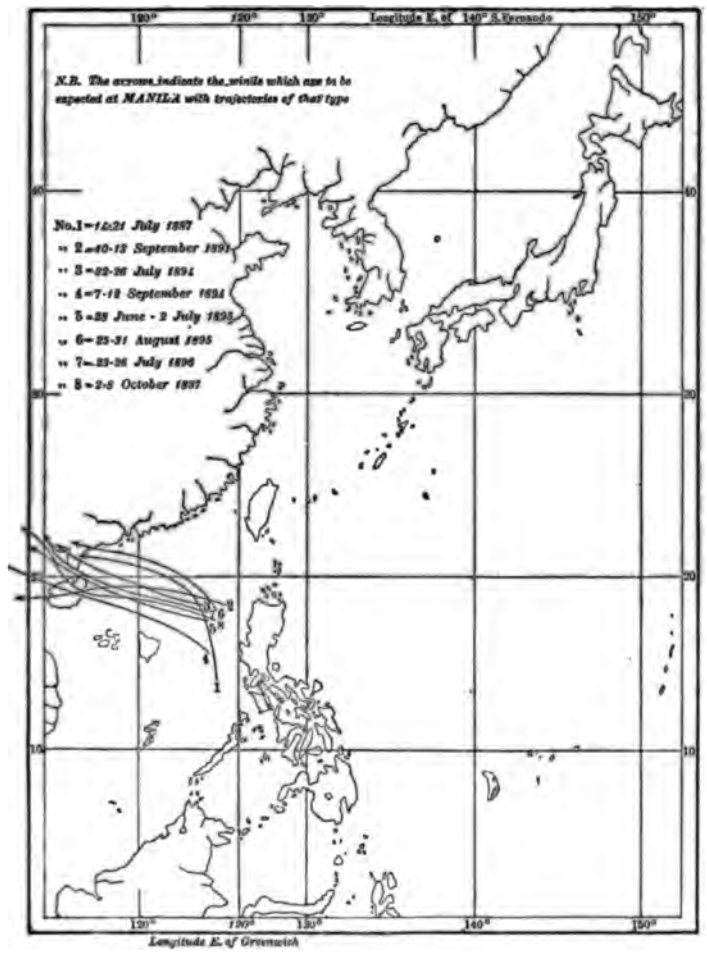
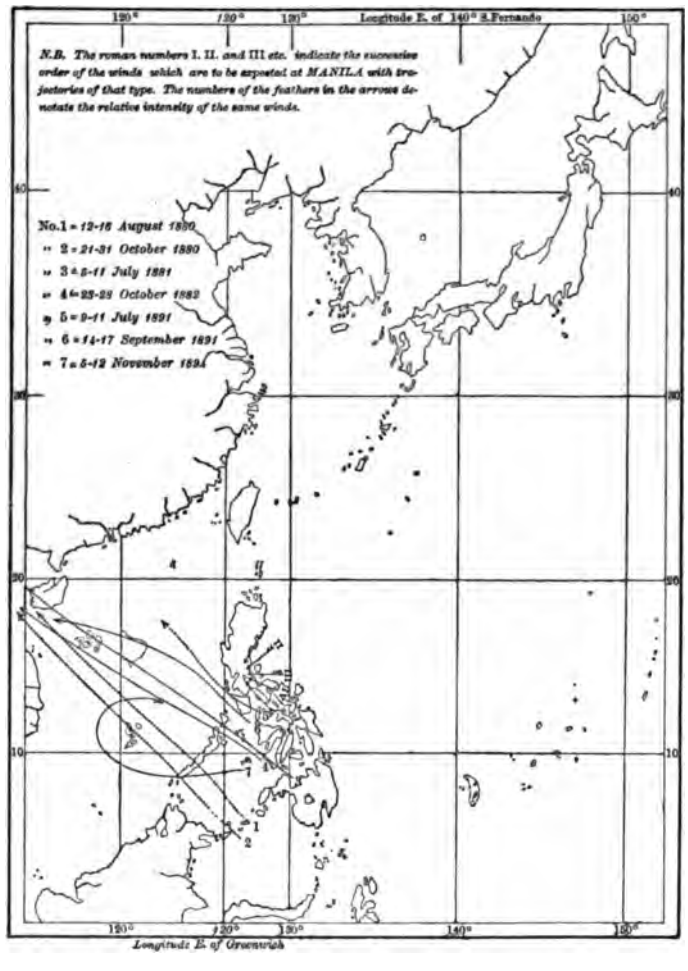


PLATE XXVI.—CYCLONES FORMED IN THE JOLO SEA OR THE INTER-ISLAND WATERS SOUTH OF LUZON.



not far from them, some in the direction of the east coast of China, others in the direction of the China sea, whether or not they reach the continent.

The 12 accompanying plates are made in accordance with this classification, and on them the trajectory of the cyclones of the extreme east may be seen reduced to 11 principal types. On each one of these maps we have graphically represented, by means of arrows, the relative intensity and veering of those winds which may be expected in Manila whenever a baguío of that particular type occurs. The Roman numerals I, II, III, placed by the side of each arrow, indicate the order of procession of those winds, or the way in which they should veer from the beginning to the end of the supposed trajectory. The number of barbs on each arrow indicates the relative intensity of the winds; that is to say, which winds usually acquire greatest force with the trajectory of the type under consideration. We represent only the relative intensity, because the absolute intensity of these winds depends upon many causes. In our opinion the three principal causes are: The minimum distance at which the vortex crosses, the greater or less development of the typhoon, and the inclination of the axis of the storm to one side or other of the trajectory. We repeat the map of Plate XX as Plate XXI with the object of giving a greater number of trajectories of baguíos which during the last two years have crossed the island of Luzón to the north of Manila.

The trajectories of those baguíos, given on Plate XXIV, may be subdivided into two classes, namely, those which pass nearest to Manila in the first part of their parabolic path; that is to say, those that cross to the south; and those which, on the contrary, pass nearest to Manila when they cross our meridian on the north after having recurved in the China sea. The veering of the winds, which may be expected in Manila with each of these classes of baguíos, is much clearer in the second than in the first. It may happen that the veering of the wind will not be greater than toward the S. or SSW., especially if the baguíos run far into the China sea before recurving. But the difference is even more notable in the relative intensity of winds. Those in the first case naturally acquire greater force if from the E., ESE., and SE., being very weak and light if from the third quadrant. On the other hand, when the baguío passes nearer and crosses the north, the winds are strongest when from the SW. and WSW., while those from the second quadrant are light or brisk in character. With the object of making this latter difference prominent on Plate XXIV, we have distinguished certain trajectories from others by the letters A or B, placed in the vertex of the parabola of each, thus giving in two distinct diagrams the different relative intensities of those winds which correspond to the two classes of trajectories.

We have been very careful to select trajectories of the last two years especially of the period 1895 to 1899, and in general have taken them from those months in which baguíos of each one of these types are most frequent.

Further particulars about the cyclones in the Far East may be seen in the English edition (second edition) of the book "The Cyclones in the Far East," published in Manila by the insular government in 1904, which may be had on application to the Manila observatory.

Thunderstorms.[1]—This term refers to those local tempests, usually of short duration, which are accompanied by more or less imposing electrical manifestations, assuming at the same time a sublime and terrific aspect.

The annual and monthly distribution of these storms in Manila merit brief consideration. A graphic illustration appears on Plate XXVII, and the frequency of these storms and their direction are also discussed.

TABLE 48.—*Annual and monthly distribution of thunderstorms as observed from the Manila observatory: 1888–1897.*

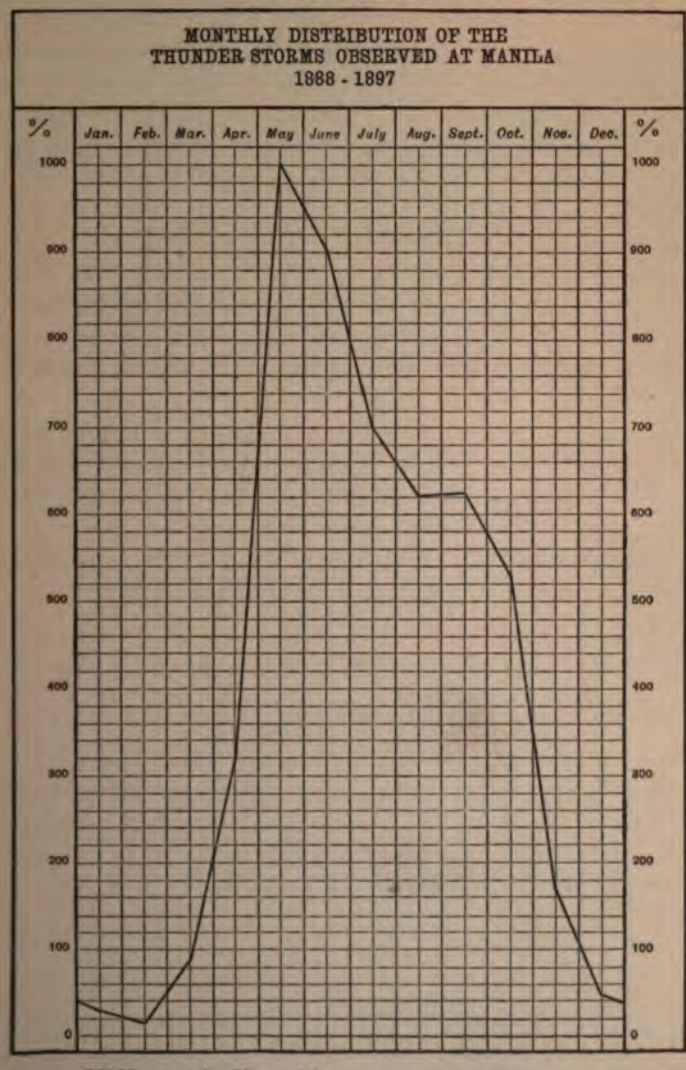
YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1888	2	.....	14	21	93	56	22	48	86	55	13	9	419
1889	5	1	8	18	78	118	80	53	116	76	29	6	588
1890	6	7	10	31	118	72	76	98	32	43	11	8	512
1891	1	.....	9	22	106	102	43	30	41	52	32	2	440
1892	4	6	14	41	121	128	90	165	48	62	17	10	646
1893	11	2	5	48	99	110	91	72	75	51	4	4	572
1894	.....	.....	2	39	115	68	74	68	48	52	8	5	479
1895	.....	.....	3	27	84	74	76	55	56	47	7	0	429
1896	.....	.....	12	17	59	98	56	32	57	39	7	1	378
1897	.....	.....	12	57	130	81	89	60	64	52	40	2	587
Total	29	16	89	321	1,003	907	697	621	623	529	168	47	5,050

Uniting by months the thunderstorms observed during the five years, 1888–1892, it appears that these storms are very rare and sometimes absent during the months of January and February, are a little more frequent during the months of March and April, and reach their maximum during the following months until October. Usually there are a few thunderstorms observed in December similar to those which occur in the second half of January.

Confining ourselves to the results which figure in the total of observed thunderstorms, it will be seen that the minimum is to be found in the month of February and the maximum in the month of May, there being a notable difference in this month and the preceding one.

[1] "Thunderstorms in Manila," by Rev. M. Saderra Mata, S. J. Paper read in the Congress for Meteorology at Chicago, 1893.

PLATE XXVII.


MONTHLY DISTRIBUTION OF THE
THUNDER STORMS OBSERVED AT MANILA
1888 - 1897
%
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
%
1000
900
800
700
600
500
400
300
200
100
0

In the month of June a decrease begins to be noted, and we may say it continues until January, although during the month of July a smaller number of thunderstorms occur than in the following month.

Comparing these conclusions with the monthly totals deduced from ten years' observations, 1888–1897, as they appear in Table 48, no marked variation appears. In the last four of the ten years there appears to be a pronounced decrease in these phenomena apportioned to the months December, January, and February, because during all of them the observatory does not record a thunderstorm in the months of January and February, or in December of 1895, and only one in December of 1896, two in December of 1897, and five in December of 1894.

Moreover, the second five years have been, without exception, the ones in which a greater number of thunderstorms were observed in July than in August, making the total number for the ten years greater than the total for August. Between the total for August and the total for September there is only an insignificant difference the latter being slightly greater.

The total number of thunderstorms observed in the ten years from 1888 to 1897, inclusive, reaches 5,050, with a resulting yearly average of 505, which amount differs little from the yearly average obtained during the first five years, 521.

How much the totals of each one of these years is separated from the yearly average can be seen in the following outline:

1888	86	1893	67
1889	83	1894	26
1890	7	1895	76
1891	65	1896	127
1892	141	1897	82

From this it appears that the year in which the greatest number of thunderstorms occurred was 1892, the minimum in the year 1890.

In the following summary appear the maxima and minima of thunderstorms during the whole ten years, for each month:

MONTH.	MAXIMA.		MINIMA.	
	Number.	Year.	Number.	Year.
January	11	1893	0	1894, 1895, 1896, and 1897
February	7	1890	0	1888, 1891, 1894, 1895, 1896, and 1897
March	14	1888 1892	2	1894
April	57	1897	17	1896
May	130	1897	59	1896
June	128	1892	56	1888
July	91	1893	22	1888
August	105	1892	30	1891
September	116	1889	32	1890
October	76	1889	39	1896
November	40	1897	4	1893
December	10	1892	0	1895

The period of greatest frequency is that of May, 1897, and the next is that of June, 1892. The small number of thunderstorms occurring in the month of May, 1896, is notable, and is probably due to the many days we were under the influence of a cyclone, which, after having passed the Visayas, turned at the west of Luzón and crossed this island in the second branch of the parabola by way of the provinces of Ilocos and Cagayán.

In order to distinguish in some manner the relative intensity of the thunderstorms recorded at the observatory during the ten-year period considered, they may be divided into three groups: First, thunderstorms which rage in a locality, or very near; second, thunderstorms which produce much thunder; and, third, thunderstorms which can only be perceived by the flashes of lightning or peals of thunder accompanied by lightning. We represent the first group by the letter T, the second by the letter L, and the third by the letter R.

Table 49 presents the total number of thunderstorms for each month during the period from 1888 to 1897, distributed into the three groups indicated.

TABLE 49.—*Relative intensity of storms observed from Manila during the period 1888–1897.*

YEAR.	JANUARY.			FEBRUARY.			MARCH.			APRIL.			MAY.			JUNE.		
	T.	L.	R.	T.	L.	R.	T.	L.	R.	T.	L.	R.	T.	L.	R.	T.	L.	R.
1888	....	....	2	....	....	....	....	7	7	3	11	7	8	38	52	1	31	24
1889	1	3	1	....	1	....	....	4	4	....	9	9	....	39	39	7	49	62
1890	....	....	6	....	1	6	....	....	10	....	7	24	11	48	59	7	19	46
1891	....	1	....	....	....	....	....	1	8	1	3	18	8	29	69	9	48	45
1892	....	4	....	1	1	4	....	2	12	....	5	36	10	52	59	9	39	80
1893	....	1	10	....	1	1	....	1	4	2	11	35	7	31	61	5	23	82
1894	....	....	....	....	....	....	1	....	1	....	4	35	4	31	80	2	20	46
1895	....	....	....	....	....	....	....	1	2	1	7	19	7	24	53	7	17	50
1896	....	....	....	....	....	....	1	2	9	....	3	14	4	21	34	10	34	54
1897	....	....	....	....	....	....	....	2	10	3	14	40	9	42	79	4	18	59
Total	1	9	19	1	4	11	2	20	67	10	74	237	63	355	585	61	298	548

YEAR.	JULY.			AUGUST.			SEPTEMBER.			OCTOBER.			NOVEMBER.			DECEMBER.		
	T.	L.	R.	T.	L.	R.	T.	L.	R.	T.	L.	R.	T.	L.	R.	T.	L.	R.
1888	1	11	10	5	29	14	5	49	32	2	26	27	....	6	7	....	4	5
1889	8	36	36	4	19	30	8	46	62	1	25	50	....	11	18	....	4	2
1890	7	27	42	7	46	45	3	12	17	1	19	23	....	1	10	....	1	7
1891	3	15	25	3	12	15	5	24	12	2	17	33	1	14	17	....	....	2
1892	6	31	53	5	40	60	....	18	30	....	21	41	....	3	14	1	3	6
1893	11	41	39	6	28	38	4	19	52	2	4	45	....	1	3	....	....	4
1894	7	27	40	6	19	43	4	12	32	4	18	30	....	1	7	....	2	3
1895	11	29	36	9	17	29	9	16	31	3	19	25	1	1	5	....	....	....
1896	3	18	35	5	10	17	....	28	29	2	6	31	....	1	6	....	....	1
1897	9	36	44	10	21	29	5	22	37	2	12	38	3	15	22	....	2	....
Total	66	271	360	60	241	320	43	246	334	19	167	343	5	54	109	1	16	30

In the monthly totals for the whole period it will be observed that the number of thunderstorms of the R group is much greater than the number of L thunderstorms, there being very few which rage in or near the locality.

The yearly totals for the ten years can be seen in the following outline:

YEAR.	T.	L.	R.
1888	20	212	187
1889	29	246	313
1890	36	181	295
1891	32	164	244
1892	32	219	395
1893	37	161	374
1894	28	134	317
1895	48	131	250
1896	25	123	230
1897	45	184	358
Total	332	1,755	2,963

This means that the total number of thunderstorms during the ten years resolves itself into the numbers 332 T, 1,755 L, and 2,963 R, resulting for each year in the following averages:

	Yearly average.
Thunderstorms:	
T	33
L	176
R	296

Since it is impossible for us to analyze the diurnal distribution of thunderstorms closely here, for want of time, we will give only a few comments in regard to this point. In general it may be said that the cases are rare in which some of these electric phenomena have been observed from 7 to 11 in the morning. At this hour approximately the tempests begin to rise and increase in force during the two months mentioned in which they are most frequent, and are accompanied by great cloudbursts and high winds, which gather in force as they move toward the zenith of the horizon, but not reaching their maximum force until about midday, or a little after. The greater number of thunderstorms T and L rise in the intervening hours between midday and 10 or 11 p. m. During the later hours of the night the thunderstorms R are most frequent, and thunderstorms L not quite so frequent. In the early hours of the morning thunder is frequently heard, though seldom followed by lightning or storms.

In order to investigate the general orientation of the thunderstorms we have grouped the 5,050 thunderstorms of the ten years which we are studying into four groups, according to whether they were observed on the first, second, third, or fourth quadrant, and we have in this manner formed Table 50.

Table 50.—*Orientation of the thunderstorms observed in Manila during the period 1888–1897.*

Year.	January.				February.				March.			
	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.
1888	1	.....	.....	1	.....	.....	.....	.....	4	3	1	6
1889	2	1	2	.....	1	.....	.....	.....	3	.....	.....	5
1890	.....	4	.....	2	1	1	2	3	4	2	.....	4
1891	1	.....	.....	.....	.....	.....	.....	.....	2	1	.....	6
1892	1	1	.....	2	1	.....	1	4	4	4	.....	6
1893	4	2	.....	5	.....	.....	.....	2	2	1	.....	2
1894	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1
1895	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	1
1896	.....	.....	.....	.....	.....	.....	.....	.....	2	2	2	6
1897	.....	.....	.....	.....	.....	.....	.....	.....	4	2	1	5
Total	9	8	2	10	3	1	3	9	27	16	4	42

Year.	April.				May.				June.			
	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.
1888	4	5	2	10	25	24	18	26	17	16	11	12
1889	7	5	.....	6	21	18	11	28	32	33	29	24
1890	4	8	5	14	29	29	33	27	15	23	15	19
1891	7	2	.....	13	32	24	20	30	25	20	31	26
1892	6	11	6	18	34	33	25	29	31	35	34	28
1893	13	11	5	19	26	25	22	26	20	28	28	34
1894	4	8	7	20	32	33	24	26	17	16	19	16
1895	9	4	6	8	24	22	18	20	18	19	17	20
1896	5	3	3	6	23	13	11	12	30	25	19	24
1897	15	14	10	18	43	30	26	31	17	21	17	26
Total	74	71	44	132	289	251	208	255	222	236	220	229

Year.	July.				August.				September.			
	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.
1888	3	8	3	8	15	13	7	13	23	22	18	23
1889	25	26	15	14	16	13	9	15	33	27	27	29
1890	20	24	14	18	32	22	21	23	11	9	4	8
1891	10	7	11	15	8	4	5	13	18	8	4	11
1892	25	19	23	23	28	26	23	28	14	16	10	8
1893	17	27	24	23	22	21	20	9	27	18	10	20
1894	27	19	14	14	20	18	12	18	17	10	10	11
1895	23	15	19	19	20	15	8	12	20	13	8	15
1896	15	16	9	16	9	7	9	7	18	13	10	16
1897	29	25	17	18	15	18	13	14	24	15	12	13
Total	194	186	149	168	185	157	127	152	205	151	113	154

Year.	October.				November.				December.			
	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.
1888	15	17	11	12	6	1	3	3	2	1	2	4
1889	23	20	14	19	10	5	5	9	6	.....	.....	.....
1890	13	9	11	10	3	2	3	3	2	2	1	3
1891	11	13	14	14	7	11	7	7	.....	2	.....	.....
1892	12	12	21	17	3	7	6	1	2	1	5	2
1893	19	12	9	11	.....	1	2	1	.....	1	2	1
1894	12	12	11	17	1	1	5	1	1	2	1	1
1895	16	13	8	10	2	.....	3	2	.....	.....	.....	.....
1896	9	8	7	15	1	1	2	3	.....	1	.....	.....
1897	13	12	9	18	10	4	12	14	1	.....	1	.....
Total	143	128	115	143	43	33	48	44	14	10	12	11

As can be seen by the monthly totals which we give, thunderstorms are least frequent in the third quadrant, the only exceptions being in the months of February, November, and December, in which the second quadrant shows a smaller total. The greatest frequency has been observed in the first quadrant in the months of May, July, August, September, October, and December, and in the fourth quadrant in the months from January to April, inclusive; in the second in June, and in the third in November.

The yearly totals for the ten years are distributed also as to the different orientation in the following outline:

YEAR.	First quadrant.	Second quadrant.	Third quadrant.	Fourth quadrant.
1888	115	110	76	118
1889	179	148	112	149
1890	134	135	109	134
1891	121	92	72	135
1892	161	165	154	166
1893	150	147	122	153
1894	132	119	103	125
1895	133	102	87	107
1896	112	87	72	105
1897	171	141	118	157
Total	1,408	1,246	1,025	1,349

The results in all cases are identical with those obtained by Father Saderra regarding the thunderstorms during the first five years; that is, the greater number, 1,408, corresponds to the first quadrant; the intermediate, 1,349, to the fourth quadrant, and the other two, 1,246 and 1,025, to the second and third quadrants, respectively.

This relates merely to the location of thunderstorms in general, irrespective of other classification. Let us consider the location (orientation) of the different classes of thunderstorms, of which we give the following outline:

YEAR.	THUNDERSTORMS T.				THUNDERSTORMS L.				THUNDERSTORMS R.			
	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.	1st quadrant.	2d quadrant.	3d quadrant.	4th quadrant.
1888	9	5	1	5	67	58	34	53	39	47	41	60
1889	12	15	2	5	82	65	39	60	85	68	71	89
1890	15	14	3	4	61	46	35	39	58	75	71	91
1891	7	8	6	11	54	39	30	41	60	45	56	83
1892	15	9	3	5	64	53	43	60	82	104	108	101
1893	14	9	5	9	55	39	30	37	81	99	87	107
1894	20	3	2	3	41	35	28	30	71	80	73	92
1895	21	7	9	11	42	38	19	32	70	57	59	64
1896	10	9	4	2	42	24	22	35	60	56	46	68
1897	16	11	5	13	69	39	35	41	86	91	78	103
Total	139	90	40	63	577	436	315	428	692	722	690	858

As seen by this outline, we have 332 thunderstorms T, of which 139 belong to the first quadrant, 90 to the second, 63 to the fourth, and 40 to the third. Of the 1,755 thunderstorms L, the smallest number (315) belong to the third quadrant, and the greatest number (577) to the first quadrant, there being a notably small difference between those of the second (436) and those of the fourth (428). The distribution of the 2,963 thunderstorms R in the four quadrants is sufficiently different. The maximum (858) belongs to the fourth; following this, in descending order, the second, first, and third (722, 692, and 690).

The observations given in the preceding pages refer to stations placed below 80 meters of altitude above the mean sea level. On the other hand, the climatological elements of a station situated 4,777 feet above the mean sea level will give an idea of the climate of other similar altitudes, for instance, those of Lepanto-Bontoc, province of Abra, Benguet, Cavite, and Tayabas. Highlands in the island of Mindanao, as around Lake Lanao, the mountain region of Cagayán-Misamis and of Surigao, have also similar climatic features, except that the rain is here more evenly distributed than in the high plateaus of Luzón.

The temperature in Benguet is very remarkable, and is lower than the average of other corresponding altitudes. This fact is due chiefly to the prevailing westerly and southwesterly winds during March, April, May, and June, the hottest season of the year in the archipelago, as pointed out in the preliminary notes.

TABLE 51.—*Climatic elements in Baguió (Benguet).*

[Altitude, 4,777 feet above mean sea level.]

MONTH.	Pressure (mm.).	Years of observation.	TEMPERATURE.					Humidity (per cent).	Years of observation.	Rainfall (mm.).	Years of observation.	Rainy days.	Years of observation.
			Mean (°C.).	Years of observation.	Maximum (°C.).	Minimum (°C.).	Years of observation.						
January	758.26	3	17.3	3	24.1	9.6	2	78.1	3	23.3	3	4	3
February	59.68	3	16.1	3	23.3	7.6	2	77.3	3	5.4	3	1	3
March	58.33	3	18.7	3	25.8	10.6	2	76.3	3	27.5	3	3	3
April	57.84	3	20.0	3	26.8	11.0	2	75.5	3	43.2	3	6	3
May	57.23	3	19.7	3	26.0	11.4	2	83.9	3	239.0	3	18	3
June	56.35	2	19.1	2	25.4	14.5	2	89.4	2	404.2	2	26	2
July	56.48	2	18.8	2	26.5	13.5	1	89.4	2	389.4	2	28	2
August	57.38	2	18.4	2	24.3	12.6	2	92.2	2	1,089.4	2	31	2
September	55.46	2	18.7	2	23.6	14.0	2	90.5	2	452.4	2	26	2
October	57.48	2	19.2	2	24.4	13.0	2	83.7	2	168.8	2	14	2
November	57.64	2	18.8	2	24.2	11.2	2	79.0	2	69.7	2	10	2
December	57.88	2	18.3	2	23.9	12.6	2	81.2	2	81.0	2	10	2
Year	757.50	.....	18.6	.....	24.9	11.8	.....	83.0	.....	2,993.3	.....	177	.....

III. VOLCANOES AND SEISMIC CENTERS.

Situation and Nature of the Archipelago—Active and Dormant Volcanoes—Historical Geology—Earthquakes—Observation of Seismic Disturbances—Volcanoes and Earthquakes in Mindanao and the Visayas—In Southeastern, Central, and Northern Luzón—Relative Frequency of Earthquakes.

By REV. M. SADERRO MASÓ, S. J.,
Assistant Director of the Philippine Weather Bureau.

The number of islands which compose the Philippine archipelago is not less than 3,141, although up to the present time no one can state the exact number. All these islands are comprised within the north Torrid zone, between 4° 40′ and 21° 10′ north latitude and longitude 116° 40′ and 126° 34′ east of Greenwich. They are surrounded on the north and west by the China sea, on the east by the Pacific ocean, and on the south by the sea of Celebes. From the extreme point of land on the northwest to the China coast is a distance of 230 kilometers. The nearest land on the north is the island of Formosa, on the east the Palos Islands, on the southeast the Molucca archipelago, on the south the island of Celebes, on the southwest the island of Borneo, and on the west Cochin China.

The waters which surround the archipelago are very deep, not far from the east coast the Pacific being from 4,000 to 6,000 meters in depth. The Joló sea between Mindanao and Joló reaches a depth of 4,069 meters, off the Celebes 3,750 to 4,755, and not far from the south coast of Mindanao the depth reaches 5,000 meters; nevertheless, the Philippines are united to the Asiatic archipelago at three points where the straits filled with islands reach but little depth, namely, north of Borneo by the islands of Balábac and Paragua, on the northeast of Borneo by the Joló group, and on the northeast of Celebes by the islands of Sanguir and Tulur. Without doubt, therefore, the whole of the Philippine archipelago belongs to the same geographic region as Borneo, Sumatra, Java, and the rest of the islands of the great Asiatic archipelago, and in consequence to Asia rather than to Oceania. Considering, therefore, only geographic reasons, it is sufficient to note the analogy which the situation of the Sunda Islands, the Celebes, the Moluccas, and the Philippines, with relation to Asia, bears to the situation of the Antilles with relation to America. The former bound the

interior China and Sunda seas, the latter, the Mexican and Caribbean seas, which bathe, respectively, the Asiatic and American coasts. According to this analogy, therefore, if the latter belong to America the former belong to Asia.

"On the other hand," says G. F. Becker,[1] "a glance at such a map as Stieler's physical map of Asia is sufficient to show that Borneo, Celebes, Gilolo, and the Philippines are very nearly related from a structural point of view. The southwestern ranges seem to gather in toward the eastern edge of the Philippines as do the branches of a tree to its trunk. The eastern coast range of Mindanao is continued southward by the Tulur Islands and others to Gilolo, in the Moluccas. Near the center of our own island of Leyte there is a fork in the mountain system, and the westerly branch is seemingly continued southward through Mt. Apo and the southernmost point of Mindanao, by way of Sanguir Island, to Celebes. In the Visayas, at Masbate, it would seem that a second branch is thrown off, extending through Negros and western Mindanao, Basilan, and the Joló group, to the Bornean coasts. More obscure is a line which starts apparently in Panay and is marked in the Joló sea by the Cagayanes, including Cagayán de Joló. A very important line is represented by the Calamianes and Palawan, continued in Borneo by the range, one point of which is the lofty Kina Balu, which is not volcanic. This range extends through Borneo to its southwest coast and, in the opinion of some geologists, not including Mr. Verbeck, there connects with Bangka. In northern Luzón the coast range, or Sierra Madre, is clearly continued by the Babuyanes and Batanes to the neighborhood of Formosa, but the relations of the Zambales range and the Caraballo Norte are not evident on mere inspection."

But if we turn our consideration from the apparent ridges indicated by the lined islands to the submarine features, then we shall find that the whole archipelago, excepting western Paragua, lies out of the shallow sea area, connecting the great islands of Borneo, Java, and Sumatra with the Asiatic continent. The deep sea in which our archipelago lies, runs through the Celebes and the Moluccas, between the Borneo shallow sea just spoken of and the eastern one connecting New Guinea with Australia.[2] Therefore, it would seem that our archipelago is really connected with the Celebes and the Moluccas, all of which lie in this sort of channel dividing Asia from Australia. It may be that further investigations will show a closer similarity between our archipelago and the Celebes and the Moluccas. Recently A. Wichman has rejected the supposed homologies between Celebes and Borneo. "The mountain ranges of Borneo are ancient, while

[1] Report on the Geology of the Philippine Islands, 1901.
[2] Malay Archipelago, Wallace, page 7.

Celebes, instead of being the remaining skeleton of an immerged land, got its actual relief from the Tertiary and post-Tertiary eruptions."[1] We shall see further on that the Philippines had the same origin.

The chief mountain ranges run, generally speaking, along the greater axis of each island, with several arms branching therefrom. Thus the orographic system follows the striking features of the whole archipelago pointed out in the foregoing quotation. In Luzón, the largest island of the archipelago, there are three clearly distinct mountain ranges, running from north to south, as far as 14° north latitude. Below this latitude the mountain ranges of Luzón, as well as those of the Visayas and Mindanao, invariably deflect more or less either to the southeast or to the southwest. We have to except only the mountain system of Mindoro and Bohol. In the island of Mindanao, besides the central range, running southward, there are many groups without any very apparent direction, in the Dapitan, Misamis, Lanao, and Cottabato districts.

VOLCANIC NATURE.

The archipelago is clearly comprised in the Pacific volcanic belt, one of the chief volcanic belts of the globe. The volcanic line of our archipelago certainly serves to connect the Celebes, Moluccas, and Sunda volcanic lines with those of Formosa and Japan. The Satsuma, Sakurajima or Formosa line seems to continue along the Philippines southward, through Sanguir and Gilolo. The volcanic belt of the Pacific is too well known for us to dwell on it here. Great efforts have been made by many authors to classify the volcanoes of the archipelago into distinct lines or parallel systems. It will suffice to mention some of them:[2]

Perry proposed to classify the volcanoes of Luzón into three lines nearly parallel to one another. The three trend northwesterly. One includes Mariveles and Taal, a second Aráyat and Banájao, the third Mayón. The Mariveles-Taal system, in Perry's opinion, passed southward through Siquijor and Mindanao, including the volcanoes Macaturín and Sanguil; it took in Ternate, and probably reached the Banda group. Mr. von Drasche called attention to the fan-shaped disposition of the islands and to the forking of Masbate, one prong of which is parallel to southern Luzón and the other to Negros and Cebú. Mr. Centeno, in his Memoria, distinguished two systems, one passing through Aráyat, Taal, central Mindoro, Canlaón, and Macaturín; the other through Mayón, Burauen (in Leyte), Camiguín de Mindanao, Apo, and Butulan. He regards the two systems as uniting to the south of Mindanao, their prolongation passing through Sanguir and to the Moluccas. He also refers to the northerly continuation of the volcanic system of the Philippine Islands toward Formosa, but without specifying the relations of the northern portion to the more southerly lines. Mr. Abella called attention to the continuity of the volcanic phenomena in Leyte northward through Biliran, Maripipí, etc., to the volcano Bulusan, and to Mayón, in southern Luzón, as well as southward to the eastern coast

[1] Dic. Binnenseen von Celebes, Petermann's Mitteil. XXXIX, 1893, page 225.
[2] Report on the Geology of the Philippine Islands, Becker, 1901, page 59.

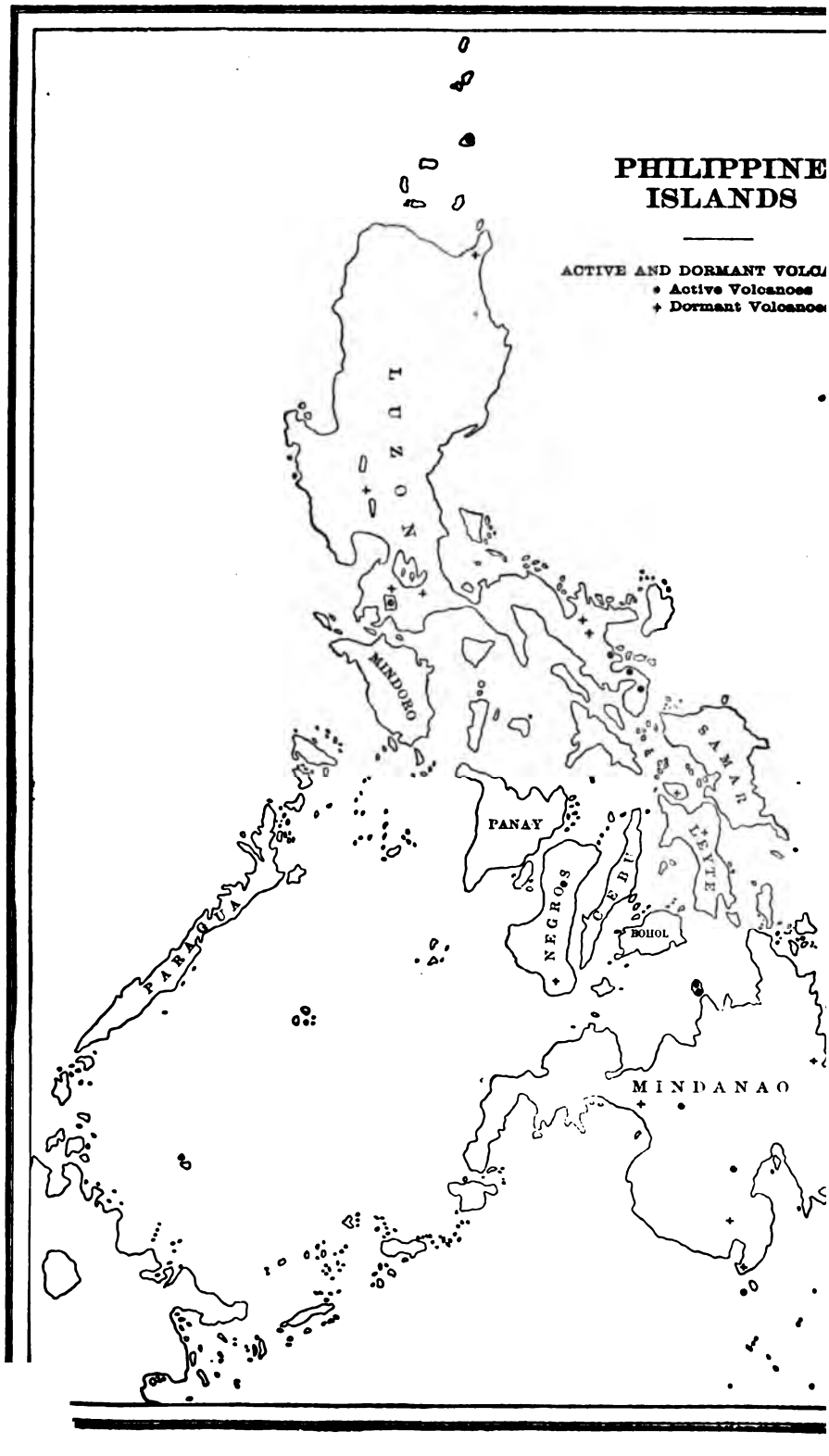
range of Mindanao. Mr. Koto gives the Philippines a single belt of active volcanoes. From the Babuyanes and Cape Engaño it passes out to sea, reaching land again in Camarines Norte, and including Biliran and Camiguín de Mindanao in its course. In the Gulf of Dávao it forks, one branch reaching Sanguir and Celebes and the other Talaut and Gilolo. This scheme omits the active volcanoes Macaturín, Magasó, Canlaón, and Taal. Mr. Koto, however, adds tectonic lines. Two of these diverge from Masbate; the eastern branch crosses the volcanic belt in Leyte and follows the eastern coast range of Mindanao; the other branch follows Negros and western Mindanao to Joló. A third tectonic line follows the Sierra de Zambales. Leaving the shore at Mariveles, it intersects Ambil and follows Palawan (Paragua) to Kina Balu, in Borneo, reaching the center of that great island.

It may be that further study concerning the structure and lithology of the whole volcanic country will lead to a knowledge of their age, and consequently to a more satisfactory elucidation of the volcanic and tectonic systems.

There are at least twenty well-known and recent volcanic cones in the archipelago, twelve of which are more or less active. The active and solfataric volcanoes are given in the following list:

TABLE 1.—*Active and solfataric volcanoes, with location, height, and date of eruption.*

NAME.	Province.	APPROXIMATE—				Height (feet).	Rock.	Date of eruption.
		Latitude.		Longitude east of Greenwich.				
		°	′	°	′			
Babuyán Claro	Cagayán	19	30	121	56	.....	.....	1831, 1860.
Camiguín de Babuyanes.	Cagayán	18	55	121	52	.....	.....	Solfataric.
Didica	Cagayán	19	2	122	9	700	.....	1856 to 1860.
Cagua, or Caua	Cagayán	18	13	122	4	3,920	.....	Solfataric in 1860.
Taal	Batangas	14	2	120	57	1,050	Andesite	1709, 1715, 1716, 1731, 1749, 1754, 1808, 1873.
Mayón	Albay	13	16	123	39	7,916	Andesite	1616, 1766, 1800, 1814, 1827, 1835, 1845, 1846, 1851, 1853, 1855, 1858, 1868, 1871, 1872, 1873, 1881, 1885, 1886, 1887, 1888, 1890, 1891, 1892, 1893, 1895, 1897, 1900.
Bulusan	Sorsogón	12	47	124	1	.....	.....	1852, solfataric.
Canlaón	Negros Oriental	10	25	123	6	8,192	Andesite	1886, 1893.
Magasó	Negros Oriental	9	15	123	9	.....	Andesite	Solfataric.
Camiguín de Mindanao.	Misamis	9	12	124	42	1,950	Andesite	1871, 1875.
Apo	Dávao	7	3	125	17	10,311	Andesite	Solfataric.
Calayo	Cottabato	7	50	124	40	.....	.....	Solfataric; eruption in 1886.


PHILIPPINE
ISLANDS
ACTIVE AND DORMANT VOLC
Active Volcanoes
Dormant Volcanoes
LUZON
MINDORO
PANAY
NEGROS
CEBU
BOHOL
SAMAR
LEYTE
PALAWAN
MINDANAO

The first three are in the Babuyanes Islands; Cagua, Taal, Mayón, and Bulusan lie in Luzón; Canlaón and Magasó in the island of Negros; Camiguín in the island of Camiguín, just off the north of Mindanao; and finally Apo and Calayo in Mindanao. The volcanoes considered as extinct are as follows: Aráyat, Maquíling, Banájao, San Cristóbal, Isarog, and Malínao, in Luzón; Macaturín and Matútum, in Mindanao. Their approximate geographic positions are given in the following table:

TABLE 2.—*Extinct volcanoes, with location and height.*

NAME.	Province.	APPROXIMATE— Latitude.		Longitude east of Greenwich.		Height (feet).	Rock.
		°	′	°	′		
Aráyat	Pampanga	15	13	120	42	2,880	Andesite.
Banájao	La Laguna	14	2	121	27	7,382	Andesite.
San Cristóbal	La Laguna	14	3	121	24	5,288	Basalt.
Maquiling	La Laguna	14	8	121	10	3,724	Basalt.
Isarog	Ambos Camarines	13	41	123	21	6,450	Andesite.
Malinao	Albay	13	26	123	34	.....	Basalt.
Macaturín	Cottabato	7	36	124	26	.....	
Matútum	Dávao	6	11	125	10	.....	

The above paragraphs refer only to the distribution of the best-shaped cones of the active and the extinct volcanoes in the archipelago. Concerning the general distribution of the volcanic rocks we take the following from G. F. Becker's report:

The interior of northern Luzón is little known, but is supposed to consist mainly of crystalline schists, broken through at some points by intrusives and volcanics; and a similar statement is true of the eastern range of Luzón, the Sierra Madre, as far south as the province of Príncipe. The southern portion of the Zambales range and the greater part of the territory between the Bay of Manila and the Strait of San Bernardino are occupied by volcanic rock. In the Visayas volcanic rocks are not rare, but Negros only is remarkable in this respect. Nearly the whole of the range, which extends from one end to the other of that exquisite island, is volcanic. According to Semper, all the larger Visayas show extinct volcanic cones, except Cebú and Bohol. Of Mindanao, it is known that there are crystalline schists along the eastern coast and Macajalar bay on the north coast, but the island contains at least three active volcanoes, not to speak of the more numerous extinct ones. Finally, much of the Joló group is volcanic, and Palawan (Paragua) is known to contain volcanic peaks. Thus, while it is by no means true, as has sometimes been alleged, that the archipelago is of volcanic origin, volcanic areas are distributed at short distances from the Batanes to Tawi Tawi.

The rocks which have been more or less inadequately determined as trachyte are of limited distribution. One doubtful specimen comes from Panay, at Barbaza, in the province of Antique; the remainder are all from Luzón. In that island, near the southern end, in Camarines Sur, between the villages Iriga and Buhi, a pumice-like tuff was considered trachytic by Roth. Mr. von Drasche found the rock base of Maquíling, not far to the southward of the town of Calamba, on Laguna de Bay, which he regarded as trachyte. Baron von Richthofen discovered trachyte on the peninsula of Binangonan, on the north side of the same lake; and Mr. von Drasche, on his map, colors the western half of the peninsula as trachyte. The trachytes recur

on the San Mateo river, near the caves, about five miles above the town of San Mateo, in Manila province. Mr. von Drasche found a large area of trachyte farther north. He encountered this rock at Pórac, in Pampanga, and to the westward of that town in the foothills of the Cordillera de Mabañgá; again close to O'Donnell in Tárlac, and once more in the province of Pangasinán, among the foothills of the Sierra de Zambales, not far from the town of Aguilar. He summarizes his observations thus: "On the eastern slope of the southern half of the Sierra there are superposed on these rocks (gabbros and diorites) thick masses of trachytic tuff, which include numerous fragments of trachyte. These tuffs can be followed to the watershed at an altitude of 3,000 feet, and on the east stand in close relationship with the plain of Pampanga, the surface of which consists principally of their decomposition products. The crystalline rocks must be pierced by numerous intrusions of trachyte, for one finds great quantities of such rock species in all accumulations of pebbles derived from the Sierra."

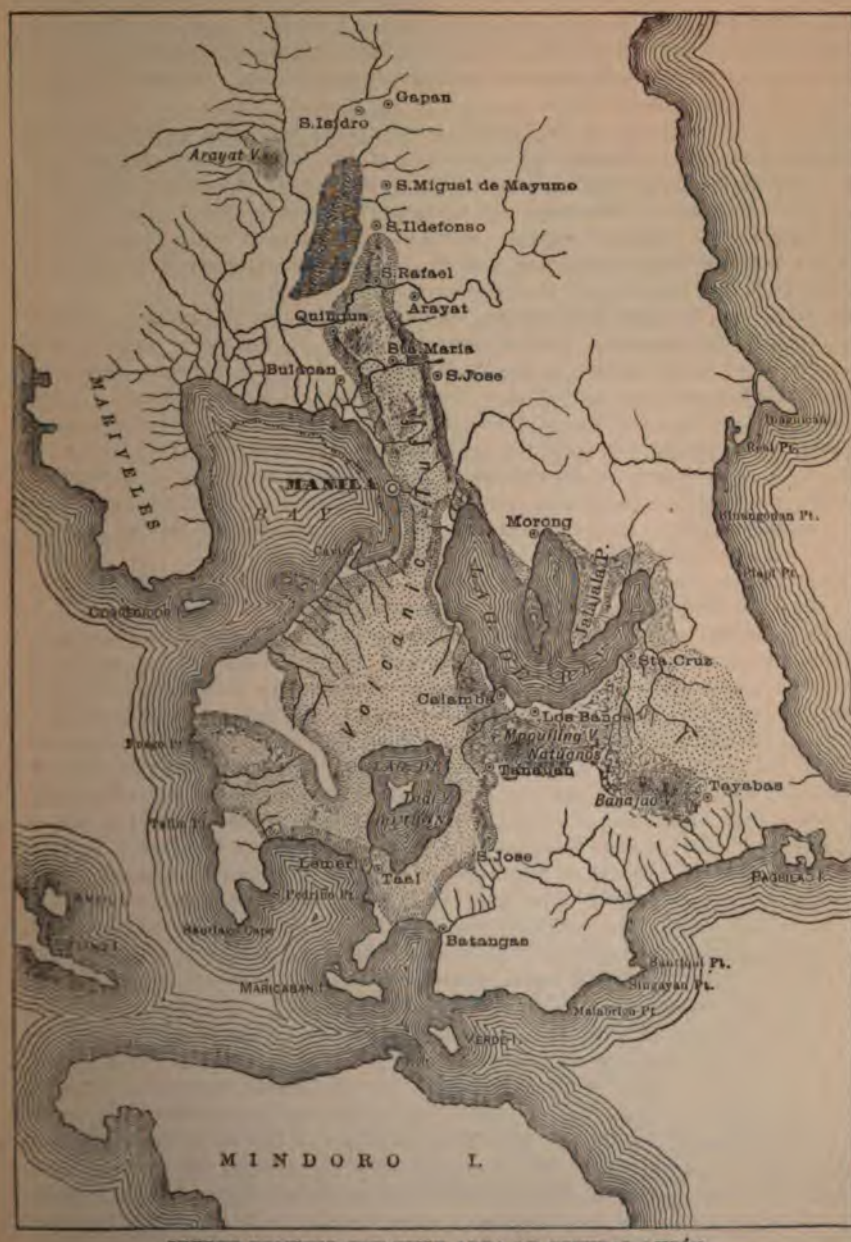
In the province of Lepanto-Bontoc also Mr. von Drasche found trachytes abundant, but closely associated with andesitic rocks. The important copper deposits of Mancayán occur, he says, in a quartz lens embedded in sanidine-trachyte.

Mr. Abella recognizes the very general distribution of trachytes in the Cordillera Central and the mountains east of the great plain of Luzón, but the only precise locality I find mentioned is at Canan, on a tributary of the Patlín river, about two miles to the westward of O'Donnell, in Tárlac province. Here dikes of porphyritic sanidine-trachyte make their appearance, "on the one side in the slopes of the hills Marangla and Cospien, and on the other between the town and the river Capatian, forming the volcanic line of the hills Dayagdag, Taoagan, and Patlín." I am not in possession of maps showing these hills by name, but they will doubtless be identified with ease from O'Donnell.

Basalts and andesites seem to be closely associated in the Philippines, as they so frequently are elsewhere, but the quantity of pyroxene-andesite probably far exceeds that of any other volcanic rock in the archipelago. The island of Talim, in Laguna de Bay, is basalt, and much of the shores of the lake is also basaltic. The Mariveles district, forming the north headland of Manila bay, was pronounced basalt by Roth on the strength of Jägor's specimens, and this determination was accepted by Mr. von Drasche, who did not visit the locality. I suspect that some of Jägor's labels were displaced, for my personal examinations and Mr. Semper's specimens show that the region is andesitic, the pyroxenic variety predominating.

The chain of extinct and active volcanoes which stretches from Laguna de Bay to the extreme southeastern point of Luzón appears to be mainly andesitic, but not devoid of basalts. In his interesting study of Panay, Mr. Abella finds that the mountain system, the skeleton of the island, is composed largely of massive rocks of two eras. The older is characterized by diorites and diabases, the younger by andesites and basalts. This latter period may be regarded lithologically as a repetition of the earlier one. In the Samaraquil peak of Anini-y, at the southwestern extremity of the island, Mr. Abella found nepheline-leucite-basalts. He considers the basalts as generally younger than the andesites.

In Negros a magnificent range extends from near the northern end of the island to the active peak of Canlaón. At the first glance this range resolves itself into three mountains of most unusual similarity, and there can be no substantial doubt that the two more northern masses are extinct volcanoes of the same type as Canlaón. I was unable to reach the main range but the streams on both coasts bring down such a mass of pyroxene and hornblende-andesite as to indicate that these are the principal rocks. In the eastern foothills, on the Talabe river, I found basalt in place which seemed to be older than a portion of the coral reefs, and is certainly older than the later ejecta of Canlaón. To the southward of the volcano the range is lower and less striking than to the northward, but at the southern end of the island the Dumaguete



SKETCH SHOWING THE TUFF AREA OF CENTRAL LUZÓN

Peaks, or Cuernos de Negros, again rise to an altitude of several thousand feet. In this region, near Dumaguete and Valencia, Tanjay, and Bais, I saw only andesite rocks.

In Cebú most of the country is covered with a blanket of coral, but where the streams have cut through this Mr. Abella found some decomposed andesites. I, too, found on the river above Naga, about two miles from the town, a considerable sheet of hornblende-pyroxene-andesite.

In the island of Leyte, at Mt. Dagami, according to Roth, Jägor collected fresh hornblende-andesite. Dagami is the name of a town in northeastern Leyte which Jägor visited, but he probably collected his specimen on Mt. Manacagan, as he calls it, a few miles south of Burauen. He speaks of the rock of this mountain as "a very hornblendic trachyte." On the island of Limasaua, just south of Leyte, Mr. Semper found hornblende-andesite, and Mr. Renard has determined the rocks of Camiguín de Mindanao as pyroxene and hornblende-andesites.

In Mindanao, the great Apo volcano, according to Mr. Joseph Montano, is andesite. He also found andesite north of Lake Dagun on Mt. Bunauan. This locality is in the valley of the Agusan, in eastern Mindanao. In much the same region he found andesites at the western foot of the coast range, on the river Miaga. A few miles upstream from Butúan, at the mouth of the Agusan, he found decomposed dolerite. Mr. Semper also collected augite-andesites from several points along the Agusan, as well as close to Zamboanga at the southwest extremity of Mindanao. Basalts, this naturalist found near Isabela, on Basilan, and on the neighboring islet of Lampinigan. Mr. J. Itier states that from Mt. Pico, in the center of Basilan, basaltic ridges, not over 500 meters in height, run east and west-northwest.

Near Joló, on the island of the same name, I found basalt. This island is mentioned by Mr. Koto also as basaltic, as are the Calamianes.

Vast quantities of pyroclastic tuffs and volcanic sediments accompany the more solid flows almost everywhere in the Philippines. They are especially abundant in the great central plain of Luzón, and seemed to stretch in an almost unbroken, nearly flat area from near Lingayén gulf southward past Manila and Taal to the seacoast of Batangas. Mr. von Drasche regards these tuffs as trachytic from the north coast of Manila bay northward, and as doleritic to the southward, but Mr. Oebbeke shows that some of the northern tuff is andesitic. In the more southerly area, along the Pásig, I am confident that andesitic tuff is abundant. Unfortunately my specimens are lost. On the other hand, much of the basaltic rock of the Laguna de Bay region is tuffaceous. In a large proportion of cases the tuff is so decomposed that a determination of its original lithological character would be very difficult. There can be no question that this tuff area has been laid down in water. So uniform a distribution and such flat surfaces could not have been attained under subaerial conditions. Evidence of aqueous rearrangement of material is frequently visible, and plant remains, or even traces of lignite in minute seams, are not rare. The light scoriaceous material of which the tuffs are composed may, as is well known, be carried to almost indefinite distances by river or oceanic currents. There is no doubt that since the close of the Tertiary the sea has flowed freely from Tayabas gulf to Lingayén gulf, and such a channel must have been traversed by currents sufficiently strong to account for the wide distribution of the tuff. Father Zúñiga seems to have been the first to see in ancient eruptions of Taal the origin of the greater part of the material forming the southerly tuff area. He has been substantially followed by all who have expressed their opinion on this subject; but Mr. Abella points out that all the volcanic vents from Arayat to Banájao must have contributed material to this accumulation, in which opinion I entirely agree with him.

The great number of mineral or hot springs in many places accords very well with the wide distribution of volcanic rocks throughout the

whole of the archipelago. Many of these springs are clearly due to volcanic action. In his introduction to the Descriptive Study of some Mineral Springs of the Philippines, Abella writes:

In the central plain of Luzón, notwithstanding its rather limited area, the mineral springs are only found at the foot of the cordilleras which limit it, or in the neighborhoods of the volcanic foci which rise in its center, and they constitute two independent and well-defined groups, the eastern related to the cordillera which here is the division from the Pacific and the western to the Zambales range.

The eastern group sometimes outcrops from the heart of the early diorites and diabases within the cordillera, and sometimes from the post-Tertiary beds which lie upon and are elevated by the trachytes and andesites.

It is believed that these modern rocks of a volcanic character, upon lifting the strata of the post-Tertiary formation and crossing them in many places, have produced in them foldings, faults, and other geological displacements which have been able to facilitate the hydrothermal mineral emissions and those of the gases which occasionally accompany them; so that certainly an a priori argument can be announced that the mineral springs thus originated should be found in lines approximately parallel to the direction of the anticlinal and synclinal axes of these beds and to the trend of the cordillera upon which they lie. Thus it is, as a matter of fact, that the springs of Sápang-Maínit in Pantabaṅgán, of Sibul in San Miguel de Mayumo, and of Sibul in Norzagaray, occur in a right line running north and south, approximately parallel to the direction of the cordillera and to that followed by the outcropping of the beds of conglomerates, sandstones, slates, and limestones which constitute the said post-Tertiary formation of the center of Luzón.

Mr. Centeno, in his Memoria Geológico Minera, says with reference to the regions of Batangas and Albay where the volcanic action is yet more active:

The province of Batangas is also very rich in mineral waters, for, besides the sulphuric waters of the volcano of Taal, of which we shall speak further on, there are several important springs in it. In the township of San Luis, at a place called Maínit (hot), some jets of hot water gush from the ground, which leave an abundant ferruginous sediment. The waters of the brook Panipil, near the town of Lemery, are very sulphurous and are used with good results by the natives for cutaneous diseases. In the territory of the same town, on the road which leads to Calacá, at a place called Mataasnabayan, there are also some springs which are little known and used. In the mountains of Taysán also there are hot springs whose composition is unknown to us, but which are used by the natives with good results for diseases of the bladder and cutaneous diseases. Besides, the water is used as an efficacious purgative in many cases. Finally, to the southwest of Bauan, near Point Cazador, there is another small spring, to which all afflicted with rheumatism and paralysis resort in search of relief from their sufferings, and which they usually find.

In the province of Albay, near the town of Tiuí, and at a place called Jigabó, there are several thermic springs of different temperatures, some containing a large quantity of sulphur, which is precipitated when the sulphureted hydrogen decomposes, and others have a gelatinous silica in solution, which the waters on cooling deposit on objects dipped into them, incrusting them in a short time with remarkable perfection.

The sulphurous springs appear at several points along the channel of a small stream, whose waters, of the ordinary temperature, conveniently mixed with the water from the hot springs, make baths of any temperature that may be desired. Underneath the round stones which make the bed of the brook there are found

small deposits of sulphur sublimate, and at certain places in a pasty state and colored by metallic oxides, which are used in that locality for paint. The second—that is to say, the siliceous springs—appear some 200 meters from the first, and are much more remarkable, not only on account of the greater space they occupy, but also on account of their very high temperature (108° C.) and the very beautiful siliceous concretions they produce, sometimes consisting of flattened cones with cylindrical terminations, perfectly joined and with bands of different colors, sometimes forming small cylindrical and semispherical hollow crystals, wholly filled with quiet and transparent hot waters. In these waters, with a little care, the purest siliceous incrustations can be obtained by simply putting the molds in them for a few days.

There are many other important centers of volcanic action shown also by hot springs, which we will make mention of when speaking of the different volcano-seismic centers.

HISTORICAL GEOLOGY.

The geology of the Philippine Islands is summarized by G. F. Becker as follows:

From early Paleozoic times onward an archipelago has usually marked the position of these islands. Prior to the Eocene nothing definite is known of them, but further investigation will very likely disclose Paleozoic and Mesozoic strata there, as in the Sunda and the Banda islands. During the Eocene it is probable that the lignitic series of Cebú was deposited, and the contorted indurated strata, which in other localities also carry black lignite relatively free from water, should be referred provisionally to this period. Whether the nummulitic limestone found at Binañgonan is Eocene seems to me to be an unsolved question. After the Cebuan lignitic epoch a great uplift and folding took place, and this may have been a detail of the late Eocene movement which so profoundly modified Asia and Europe. It must have brought about temporary continuity of land area between Borneo and Luzón. Somewhere about the middle of the Miocene the country sank to a low level. Many of the present islands must then have been far below water, while Luzón and Mindanao were represented by groups of islets. Observations appear to suggest that the Agno beds represent the basal conglomerate formed at this subsidence. A slow rise began again during the later Miocene, and may have continued to the present day without inversion, yet the actual distribution of living forms is such as to give some grounds for believing that at some intermediate period the islands were a little higher than they now are, but sank again only to rise afresh. The diorites and associated massive rocks, including their tuffs, may have made their appearance about the close of the Paleozoic. The less siliceous of these rocks seem to have followed the more siliceous intrusions as a whole. The gold deposits, and perhaps other ores, are so associated with these massive rocks as to indicate a genetic relation. The neo-volcanic period began as early as the highest Miocene horizon, and very probably at the post-Eocene upheaval. If the semiplastic marls of Cebú are all Miocene, the earlier andesitic rocks, at least, date back nearly to the great upheaval. Among these rocks also there is sometimes a tendency for the basalts to follow the andesites, but the one dacite found at Corregidor is later than the andesites of that island. The relation of the trachytes to the andesites is not certain, but the sanidine rock is probably the earlier. A very large part of the neo-volcanic ejecta has fallen into water and been rearranged as tuffaceous plains. The volcano vents appear to me to occur rather on a network of fissures than on a single system of parallel diaclases, and the volcanic activity is to be regarded as a thermal manifestation of the energy of upheaval.

In another report the same author says:

When the elevation was at its minimum the archipelago was reduced to a group of small, hilly islets, four of which existed within the area now occupied by the island of Luzón. Cebú was almost completely submerged.

At or before the period of maximum subsidence began a series of eruptions which has not yet closed. Mayón volcano, in southern Luzón, had a violent eruption in 1897. It is probably the most beautifully symmetrical volcanic cone in the world, and the truncation at the top, due to the crater, is scarcely sensible.[1] The work done in fusing lavas and ejecting ash is probably a manifestation of the energy involved in the mighty earth throes which bring about regional upheavals with incidental subsidences. The earlier of the eruptions under discussion were largely submarine and vast additions were made to the superficial material of the archipelago by these outflows, especially in the central and southern portions of Luzón. The ejecta include andesites, rhyolites, basalts, and probably other less common rock species.

The period of upheaval, once initiated, does not seem to have been interrupted by any era of subsidence, and the modern coral reefs give evidence that it is still in progress. It is said that uplifts accompanying earthquakes have actually been observed by the Spaniards, and the earthquakes themselves are spasmodic jars in the process of elevation. The elevation has not been, properly speaking, catastrophic, however, for the tremors which may wreck a cathedral are insignificant from a terrestrial standpoint. On the whole, the uplift has been very gradual, so that even the coral polyp has been able to adjust himself to the changing conditions, building outward into deeper water as his old home was raised too high for his welfare. In this way nearly the whole of Cebú, to a height of over 2,000 feet, has been covered with a nearly continuous sheet of coral, which can be followed seaward into living reefs. Much of Negros has been clothed with a similar mantle. On a small scale, also, off the coasts of these islands, and particularly about Mactán, reefs can still be studied in every stage of upheaval, all those portions being dead which are exposed to the air even at the lowest tides. In southern Luzón and to the northward of Lingayén bay similar phenomena can be observed.

Although upheaval does not appear at any time since the close of the Tertiary to have given way to subsidence, there have been repeated pauses in the uplifting process. On exposed coasts these pauses are marked by benches eaten into the land by the action of the waves. Thus the southern ends of Cebú and Bohol are terraced from top to bottom, each terrace being an old bench cut out of the rock mass by stormy seas. Pauses in the uplifting process are also marked by a rude stratification of the corals. Even in the interior of the islands terraces indicative of uplifts are frequently visible. Some of them represent base level of erosion, others are ancient coral reefs which have been checked in their upward growth by reaching the surface of the water. In short, terraces constitute one of the most prominent topographical features of the archipelago.

EARTHQUAKES.

We may truly say, speaking of the Philippine archipelago, what Mr. A. R. Wallace says of the Malay archipelago:

In the whole region occupied by this vast line of volcanoes, and for a considerable breadth on each side of it, earthquakes are of continual occurrence, slight shocks being felt at intervals of every few days or weeks; while more severe ones, shaking

[1]The radius of any horizontal section is the hyperbolic sine of the distance from this section to the summit.

down whole villages and doing more or less injury to life and property, are sure to happen in one part or another of this archipelago almost every year.

It is an elementary principle that the earthquakes as well as the volcanoes occur along the lines of relief shown either by ridges or mountain ranges or by sea deeps or depressions, and especially when there rises a high ridge not far from a sea deep, thus forming a steep slope, as, for instance, along the Japanese and Kurile islands, south of Sunda Islands, and in the West Indies. The Philippine archipelago on this account may be considered as a clastic country. Owing to the small breadth of the islands and the depth of the seas it is almost formed by ridges. Here occurs also what Milne says of the southern regions or the Java district. In this district the suboceanic irregularities are as irregularly distributed as the islands between which they occur. Many of these islands are but mountain ranges or peaks emerging from the sea.

The recent observations of Dr. E. von Rebeur Paschwitz, Milne, and other seismologists about earth tremors, with the invention of the extremely sensitive microseismographs, have thrown much light on the character and extent of the seismic movements, or earthquakes, and open a new field for research.

We may divide closely the earthquakes into rockfall, volcanic, and tectonic.

The rockfall earthquakes are due to the falling in of the roofs and sides of subterranean hollows or caves. They are feeble, of very small extent, and may often be noticeable only as sounds and not as sensible shocks.

The volcanic earthquakes are those due to the activity of volcanoes, with which may be included earthquakes due to the rending open of fissures by the sudden development of steam under high pressure.[1]

This last cause has been inferred in the case of some earthquakes, but its reality has never been proved; volcanic activity is well known, however, to be associated with earthquakes, and these may sometimes be of very great severity, though always local in their extent. Within a very moderate distance of a town which has been laid in ruins the shock may be quite insensible.

To the class of tectonic earthquakes belongs by far the majority of earthquakes and all those which can be classed as really great, on account of their violence or extent. They may be regarded as invariably due to the sudden relief of strain, as opposed to the volcanic earthquakes, properly so called, which may be regarded as due to the sudden development of strain.

[1] Probably the earthquakes which preceded the eruption of the Camiguín volcano may be referred to this cause. They ceased suddenly with the outburst of the volcano. (See Camiguín volcano, page 159.)

The investigations just mentioned led Mr. Milne to propose a wider division:[1]

The earthquakes may be divided into two groups: First, those which disturb continental areas and frequently the world as a whole; and, secondly, local earthquakes, which usually only disturb an area of a few miles' radius, and seldom extend over an area with a radius of 100 or 200 miles.

The former are very probably the result of sudden accelerations in the process of rock folding, accompanied by faulting and molar displacements of considerable magnitude; whilst the latter are for the most part settlements and adjustments along the lines of their primary fractures. The relationship between these two groups of earthquakes is therefore that of parents and children.

The former, which represent a disturbance, not only of the crust of the world, but also of the homogeneous nucleus it covers, will be referred to as macroseismic disturbances or large earthquakes; and the latter, which appear to be the shiverings within the crust, will be referred to as microseismic disturbances or small earthquakes. To avoid confusion it must be mentioned that several observers refer to the world shaking disturbances as microseismic, the reason, no doubt, being that they are usually recorded at such a great distance from their origins that their vibrations have so far died in amplitude, and increased in period, that they can not be felt or be seen in the traces of an ordinary seismograph. It also must not be overlooked that the term microseismic has been used to describe disturbances evidenced by minute and long continued swingings of pendulums and other apparatus, the cause of which is, in many instances at least, attributable to movements in the atmosphere rather than in the earth.

According to the recent investigations of the same Prof. J. Milne, the Philippine archipelago is included in that region of the globe in which the greatest number of macroseismic earthquakes has occurred since 1899. This region of maximum macroseismic activity takes in the Philippine archipelago, the whole of the Dutch East Indies, Celebes, Borneo, the Moluccas, New Guinea, and several other islands in the Pacific. Forty-one large earthquakes, which were registered all over the world, have had their origin in this region during the last four years. Of these earthquakes at least four had their origin in the Philippine archipelago, or very close to it, viz, that of the 15th of December, 1901,[2] felt in Luzón, which was not destructive; that of the 21st of August, 1902, which took place in Mindanao, close to the Lanao Laguna and Illana bay; that of the 26th of August, 1902, which was felt in the province of Iloílo; and finally that which occurred in Guam on the 21st of September, 1902. What happened in the earthquakes of December 15, 1901, and August 26, 1902, proves that some earthquakes, nondestructive at their origin or epicenter, may send their waves around and across the globe.

The seat of origin of both the Mindanao and the Guam earthquakes appears to be submarine, while that of the Luzón and Panay earthquakes seems to be terrestrial. The seat of origin of the Mindanao

[1] Seismological Observations and Earth Physics, 1903.

[2] A report on the propagation of the seismic waves around the earth in this earthquake, by Fr. Marcial Solá, S. J., may be seen in the Manila observatory bulletin for December, 1902.

earthquake must be quite close to the coast, because, according to reports, it caused ground displacements not only on the sea but also on land. Further on we shall have occasion to speak again of this center which is situated between Zamboanga and Cottabato. There are other important submarine centers in the archipelago; one being in the Joló sea, another not far from the island of Masbate, and probably another in the Pacific opposite the coast of Binañgonan, nearly east of Manila.

We shall treat of these as well as of the terrestrial centers more at length later on. At present we have not sufficient data to say precisely how many of the different volcano-seismic centers in the archipelago give rise to macroseismic movements; because it is only within recent years that, with the aid of apparatus of Milne, von Rebeur, and Vicentini, the existence of these macroseismic centers has been manifested, and even in the Philippine archipelago not enough occasions have presented themselves for us to distinguish the nature of each center. The Vicentini microseismograph has only been in operation in the Manila observatory for a little over a year and a half, and yet already many earthquakes of a distant origin have been registered, as for example, the Guatemala and the Andijian. There have also been registered in Manila almost all of those earthquakes called by Milne microseismic, the origin of which was within the archipelago. When a fair number of observations of these latter earthquakes shall have been collected it will be possible to say which of the numerous foci in the archipelago which appear to give out microseismic earthquakes are really volcanic, which rockfall, and which tectonic. In the short description of the principal ones something will be said on this particular.

Before finishing we will add a word or two on the movements called microseismic, the cause of which is, according to Milne, in many instances at least, attributable to movements in the atmosphere rather than in the earth.

An hourly register of these movements has been taken at the Manila observatory since the year 1881 by means of the Bertelli tromometer. A careful examination of these observations, in conjunction with those of the ordinary movements of the atmosphere, has led to the following conclusions:

First, the greater part of these movements in Manila are due to endogenous causes; second, when the movements of the atmosphere cause these microseismic movements they do so indirectly, now by the movement produced on the sea, at other times by the pressure on the mountains. The first movement has greater effect than the second; so much so that it may be said that as soon as there are waves in the Pacific, the microseismic movements are observed in Manila. The movements of the other seas have much less influence than those in

the Pacific. When there are any extraordinary movements in the atmosphere, or cyclones, the tromometer gives indications which may serve as indirect signs of a cyclone. The Rev. Father Algué, in his book "The Cyclones of the Far East," after having studied the registers of the tromometer during the passage of several cyclones over the archipelago, comes to the following conclusions:

First. The tromometrical oscillations and the distance of the center of the cyclone vary inversely, but the proportion is not a mathematical one.

Second. The force of the wind in the locality has a certain relation with the movements of the tromometer, but it can not be considered as their cause. It would appear that the direction of the wind had a slight influence on the oscillation of the tromometer. This is doubtless because the direction of the wind depends upon the orientation of the center of the cyclone.

Third. The gradual perturbation of the tromometer constitutes an indirect sign of the existence and approach of a cyclone, but a sign which has only a relative scientific value depending upon the experience of the microseismic movements proper to each locality and also on the frequency of microseismic movements produced by endogenous causes.

We notice three important points in this conclusion. The first is that the microseismic oscillation is an indirect sign of a cyclone; the second, that the scientific value of this sign is purely relative and depends upon the experimental knowledge of the movements in each locality, for the geographical position, the topographical, and even the geological constitution of the soil play a great part in facilitating or hindering the transmission of the mechanical movements produced by cyclone forces. All these factors have to be taken into account and their influence on microseismic movements determined by experiment.

Finally, the scientific value of these microseismic movements as a sign of a cyclone depends upon the frequency of the movements produced by endogenous causes. This is the principal cause why the microseismic movements can not have an absolute value.

SEISMIC SERVICE IN THE PHILIPPINE ISLANDS.

During the old meteorological service only those stations of the island of Luzón connected by telegraph with the central observatory were properly meteorologico-seismic, although all the stations in the register of meteorological observations usually noted the principal earthquakes which they had felt. In the new service all the stations in the archipelago are at the same time meteorological and seismic, as almost all of them are provided with a seismological apparatus with which they can analyze much better the earthquakes which occur with such frequency in almost the whole of the archipelago.

To extend the network of seismic stations to all the islands it was determined to erect a seismograph of exactly the same pattern at each station, so that the curves obtained from the different points for any one earthquake could be compared without the inconvenience of having to reduce them, as would be the case if different patterns of instruments were employed. It was, moreover, agreed upon that this pendulum should only be sensitive enough to record those movements of the earth which are perceptible to persons moving about.

By this we do not exclude the more perfect instruments; indeed, so far from this being our purpose, we intend to place in some of what we might call the classic points of seismic activity, instruments of a much greater sensitiveness.

The central observatory is at present furnished with the following instruments, most of them being placed on the solid pier rising through the floors in the left tower of the main building:

INSTRUMENTS FOR DIRECT OBSERVATION.

Bertelli's horizontal microseismometer or tromometer.
One vertical microseismometer.
Three ordinary seismometers—two for horizontal and one for vertical motion.
One pendulum for the direction of initial motion.
Two cryptophones—one of which has the surface of a paraboloid mathematically traced by Father Rankin, assistant director of the Manila observatory in 1886.

REGISTERING SEISMIC INSTRUMENTS.

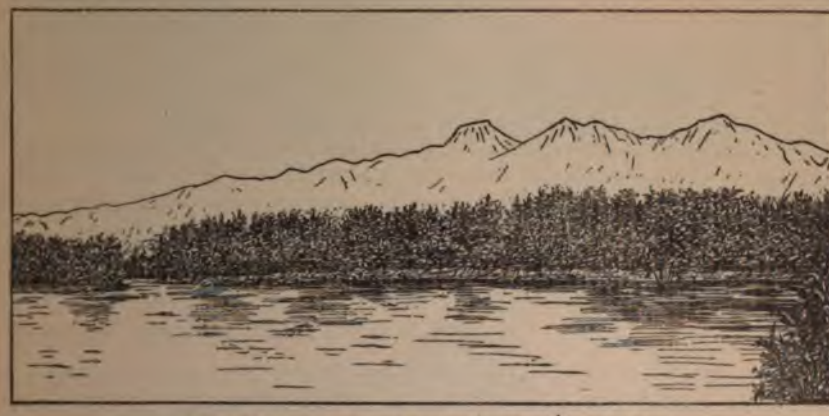
Cecchi's microseismograph.
Cecchi's seismograph.
Rossi's microseismograph.
Gray-Milne's improved triple pendulum seismograph.
Vicentini's improved microseismograph.
Necoman's improved self-recording tide gauge.

There are also several microseismographs in the astronomical building adjusted to the solid bases of the equatorial and transit telescopes.

For the purposes of the new seismo-meteorological service the archipelago is divided into four districts or sections; this division we shall adopt in this report, setting aside the one used heretofore in other pamphlets.

EASTERN MINDANAO AND THE VISAYAS.

This southeastern region, or the first meteorological district, is situated east of the meridian 123° 30′ east of Greenwich, and south of 12° north latitude. It comprises the greater part of Mindanao, the islands of Leyte, Bohol, and Camiguín, and the southern part of Sámar and of Cebú. It includes the active volcanoes of Camiguín, Apo, and Calayo, and some of the most active volcano-seismic centers of the archipelago.



APO VOLCANO LOOKING WEST FROM DÁVAO RIVER.

OUTLINE OF THE APO VOLCANO.

THE VOLCANO OF APO (MINDANAO).

The seismic region of this focus probably comprises not only the southeast of Mindanao but also the southern part of Misamis, the whole district of Cottabato, and the sources of the Agusan river. Besides the solfataric volcano Apo, the giant of the archipelago, there are some other volcanic cones lying in this region. The extinct volcano Matútum, at the farther end of the Sarangani bay, is very striking, owing to its clear conic shape; there also rises, at the most southern edge of the island, Mt. Butulan, generally considered as a volcanic cone as well as the highest peak of the Sarangani Islands.

MATÚTUM VOLCANO, LOOKING S.

The Apo volcano (7° 03′ north latitude and longitude 125° 17′ east of Greenwich), the summit of which rises 10,311 feet above the sea level, gives evidence of its activity by numerous solfataras, or jets of sulphurous vapors, which escape with a sharp, hissing sound and hover, cloudlike, over the summit of the mountain. The principal solfataras break out from a nearly southern crevasse which starts from the top, or the ancient crater, down the side of the mountain. The first man who tried to ascend this volcano was D. José Oyanguren, in 1859, but he failed. In 1870 Mr. Real, governor of Dávao, attempted it, but he succeeded no better. At last it was ascended, in 1880, by Mr. Montano, Mr. Joaquin Rajal, governor of Dávao, and the Jesuit missionary, Father Mateo Gisbert; in 1882 by Messrs. Schadenberg and O. Kock; and in 1888 by the Jesuits, Martin Juan and John Doyle. These two Jesuits were taking magnetic measurements in Mindanao in order to draw a magnetic chart; after obtaining the absolute magnetic values of declination, dip, and horizontal force at Dávao, Sámal, Malálag, and at the mouth of the Tágum river, they ascended the volcano in order to determine on its top the magnetic values and to take photographs, but, as happened in all the ascents, the stormy weather stopped the work, and thus they were only able to determine a fair value of the horizontal force at 3,000 meters altitude.[1]

[1] The magnetic values obtained by these fathers may be seen in the Monthly Bulletin for October, 1902, of the Manila observatory, and in the Report of the Philippine Commission for the year ended August 31, 1902 (Appendix P, page 678).

The reports of the different parties show that there is not a single regular and deep crater in the summit. According to the Guía Oficial the summit consists of three peaks, of which the present crater forms the most southwesterly. Mr. Montano says that this extinct crater measures 500 meters in diameter; its interior slopes, like the exterior ones, are covered with stunted vegetation. It seems probable, therefore, that the present activity does not exist on the very summit, but a little below, where the enormous crevasse running downward opens and which is reported by all the visitors as the active crater of this volcano. It opens on the southern side of the mountain, the northern side being covered with vegetation up to the top. Around this crevasse, which is about 50 meters wide and 20 to 60 meters deep, there runs the space reported by Montano as denuded of all vegetation and covered with a mantle of sulphur, ashes, and andesitic blocks. The crevasse seems to run up from the height of 2,400 meters to near the top of the crater. Mr. Rajal, who made the ascent with Doctor Montano, describes the summit as follows:

Being on the top (they ascended following eastern ridge) we saw to the west an enormous crater, the walls of which were formed of andesitic edges and ashes, in the bottom of which there was a lake. Stunted vegetation covered the lower part of the interior slopes. Some 400 meters below we distinguished a second lake in another similar but smaller crater. To the north, but separated by a deep crevasse where the Siriban river has its origin, rises a lower mountain cut near its summit by a deep and ridged cavity, probably some other ancient crater.

We take from Otto Kock's report the following description:

At the height of 1,320 meters we forded the river Vaigmainit (warm water) which river, according to the natives, is very hot at its source. A little higher up we came across the channel of a river with running water, but which was not drinkable on account of the amount of sulphurous acid and sulphohydrate which was held in solution. The atmosphere also contained a large amount of sulphurous acid. On reaching a height of 2,700 meters the first large solfatara was met with. It was in the form of a very wide crevice, with several others not so large. All of them gave out sulphurous vapors in great quantities and the ground around was very hot, and at times there were heard loud subterranean noises like those given by a powerful steam engine. At that height a brick was found having the following inscription which recorded the former expedition: "Apo, única expedición Rajal 1880." From the region of the solfataras the ascent was easier till the most northerly of the three peaks was reached. It is the most northerly peak which contains the volcano. The southwest peak, which is higher than the other two, was also very difficult of ascent because the ground was very soft, and in some places undermined so that if one put his foot carelessly on it the ground shook and sank. The large crater is in the highest peak and is covered by a lake of moderate dimensions, situated to the southeast, with a large pyramid formed of enormous blocks, which are completely covered with sulphur which had been deposited on them. The third peak is to the west-southwest of the principal one.

On descending Mt. Apo we came across two new solfataras below the northeast peak. These two solfataras did not exist on the ascent of the first expedition. About 100 meters lower down there was a hole from which came a great deal of steam but which had absolutely no smell.

Looking at the volcano from Dávao or Sámal on a cloudless morning there may be distinctly seen a wide space, narrowing to the lower part, covered with small cones of sulphur, from which burst forth intermittent eruptions of white sulphurous vapors. This is a magnificent spectacle when at sunrise the sulphur mantle and cones are shining and there then appears a sudden jet of vapors, sometimes growing and growing until the white, fine cloud covers the whole spot and even the summit of the volcano. Though Apo is well known to be active there is no record of its eruptions.

The Apo volcano-seismic center is one of the most active of the archipelago; small seismic shocks are felt weekly, if not daily; very often a rumbling sound precedes the stronger shocks; such a rumbling sound, invariably attributed to the volcano, has been reported also without any perceptible shocks.

The most violent earthquakes felt in this region may be seen in the following list:

TABLE 3.—*Earthquakes of the Apo region.*

YEAR.	Month.	Day.	Hour.	Remarks.
1836....	January	3	.....	General earthquake accompanied, according to some, by volcanic eruption.
1870....	November..	4	3.00 a. m.	This earthquake was felt over almost the whole island of Mindanao. Its violence in Dávao is not known; it was destructive in the northern provinces toward Misamis.
1871....	June	28	3.30 p. m.	Very violent earthquake.
1871....	December ..	19	10.30 p. m.	Earthquake felt in this region more than in western regions.
1872....	August	24	9.01 p. m.	Several shocks distinctly felt; destructive principally in the southeast of the island.
1878....	September..	17	0.50 a. m.	Destructive effects inconsiderable.
1894....	February...	10	1.05 a. m.	Earthquake destructive principally in the southeast of Mindanao.

SEISMIC CENTER OF THE AGUSAN RIVER.

Independent of the above-mentioned Apo center there is another seismic center in the southern part of the Agusan river valley, about longitude 125° 50′ east of Greenwich and 7° 40′ north latitude, not far from the source of the river. This focus is possessed of great seismic activity, as is evidenced by the long series of earthquakes observed and carefully recorded by the Jesuit missionaries of that region since the year 1890. In June, 1891, a violent earthquake was the beginning of a long and fearful seismic period. This earthquake produced the most awful havoc to the houses and ground; fortunately, owing to the wildness of the country, there was little loss of life or of property. The falling banks of the river dammed it in many spots. Long and wide fissures were opened everywhere, especially on the hills separating the Agusan valley from the Hijo and Sálug rivers, which empty themselves into the Dávao gulf. The earthquake lasted several minutes, and during this time, says an eyewitness, the ground was moving

as the troubled sea. During the following months, or during more than a year, the earth trembled with more or less force every day. In June, 1892, there was a second violent earthquake, shaking the same region and renewing the havoc of the preceding year. These two earthquakes shook the island of Mindanao nearly from end to end, and were fairly perceptible in the eastern Visayas. From these dates small shocks have been more frequent in this region than in any other part of Mindanao. Their cause is probably geomorphic rather than volcanic. There are unmistakable signs that the southern coast of Mindanao comprised between Cottabato and Panguián point, the most southern one of the island, is at present undergoing subsidence, while, on the other hand, an upheaval seems to be going on in the northeastern and Pacific coast of the island. The southwestern part of the epicentral region, especially the hills or low ranges where the widest fissures were opened, may be considered as the junction between the eastern ranges of Mindanao, running from Surigao to the San Agustín cape, and the central one, stretching from the Diuata and Sipaca points in the north to Panguián point in the south. All the rocks in this range, through which run the Sálug and the Tubúan rivers, are of madrepore and polypus of recent formation, alternating with clay beds and limestone strata. "On going up the Sálug river," says Mr. Montano, "I came across frequent rapids and waterfalls. The rocks which form these falls are of white limestone mixed with enormous blocks of coral polypus, doubtless Astraea, very similar to those still growing in the Dávao gulf. This is another proof of the recent upheaval of this part of Mindanao." The eastern range is andesitic, as also are some hills northeast of the epicentral region and probably also the central range. Owing to the fact that this epicentral region until the year 1880 was quite unexplored and only inhabited by wild tribes, there are no reports concerning earthquakes possibly radiated from this center in earlier years.

VOLCANO-SEISMIC CENTER OF MACATURÍN.

The region most affected by the earthquakes from this center, or centers, which are located west of the foregoing ones, is comprised between the parallels 8° 38′ and 6° north latitude and the meridians 123° 38′ and 124° 45′ east of Greenwich. In it lies the famous but almost unknown volcano Macaturín. From the time of the arrival of the Spaniards in these islands, in the sixteenth century, three eruptions are reported—one on the 20th of January, 1840; another on the 1st of November, 1856; and the third, according to various accounts, occurred a little before the earthquake of the 8th of December, 1871. This last earthquake was very destructive in Cottabato, Polloc, and westward along the Illana bay coast. The actual state of this volcano, which is supposed to lie at about 7° 40′ north latitude and longitude

124° 03′ east of Greenwich, is not known. Various authors say that the volcanic bombs thrown up by this volcano may be seen near the port of Polloc, which is at a distance of 7 leagues from the volcano. Many volcanic rocks may be seen lying on the coral banks which extend along the coast from Polloc to Malabang. In this military post, which is famous for the springs which issue from cellular basalt mixed with clay beds, there may be seen a kind of porous or scoriaceous detritus, probably due to some relatively recent eruption.

Northeast of the Macaturín, at the southern part of the Misamis district, somewhere about 7° 50′ north latitude and longitude 124° 40′ east of Greenwich, and close to the Río Grande, otherwise known as Pulangui river, there is a small volcano called Calayo, or Volcán. The first report of it comes from the Jesuit Father Eusebio Barrado, perhaps the first white man who traveled across the island of Mindanao from the Misamis district to Cottabato, in 1891. His report of this volcano is as follows:

> The river Pulangui (Río Grande) flows from Linabo through different kinds of land with a very swift current, and at a spot called Salagapón there is a wonderful waterfall. Not far from it and close to the same river is a volcano, which burst into eruption some four years ago and constantly emits vapors which burn everything about. The banks of the river are here so steep, high, and close together that they form a very narrow canyon. On the left of this bank stands an active volcano. There is no flow of lava, but it emits a column of vapors so sulphurous as to prevent any approach.

Down the same river, or near Cottabato, Mr. Centeno in his chart marks the Cottabato hill as a volcano, and he observed many other conical hills along the river which he did not examine. On the slope of the Cottabato hill looking toward this town there is a sulphurous hot spring.

In past times the region bordering the Illana bay has doubtless been frequently devastated by violent earthquakes, but history records only the following: December, 1636, 1858; January, 1864; December, 1871; March, 1882; February, 1889; and August, 1902. The earthquakes of 1858, according to some reports, were the effect of an eruption of the Macaturín volcano. Great molar displacements on the surface of the ground and under the sea were caused along the Illana bay coast by the earthquake of 1636, when the Flechas point was badly cracked. In the last earthquake large displacements were produced not only on the seashore but also in the whole of the tract separating it from Lake Lanao. Some idea may be gathered of the violence of this earthquake from the following note published in the newspapers of Manila on the 27th of August:

> The island of Mindanao is receiving a general shaking up these days, and from the number of the earthquake shocks and tremors that are occurring there it is evident that there are mammoth disturbances in the earth at the present time. The earthquakes continue unabated, and since the first shock, on the 21st instant, there

have been about four hundred slight tremors, with perhaps twelve or thirteen shocks, many of them severe enough to overturn stacks of quartermaster and commissary supplies. Captain Pershing wires the division commander that it has been reliably reported that twelve Moros were killed near Tubaron on the 21st by falling houses, and that since that date shocks have been alarmingly frequent; that the stores piled up for the troops are frequently overturned, and that the barns have been wrecked. The work of reconstructing the storehouses is progressing as rapidly as possible, but the frequency of the shocks and the tremors make it extremely difficult to rebuild. The Moro forts at Bayán and Bacólod are reported to have been seriously damaged during the first shock on the 21st. General Sumner also wires from Zamboanga that a severe shock was felt at that place on the morning of the 21st.

The submarine cable was broken in several places and it was so buried in other places that it would seem that the sea had changed its depth considerably.

These facts and the directions of the shocks observed at Zamboanga and Cottabato, especially in those of 1871, 1882, and 1889, induce us to believe that there is a submarine center of great activity near Illana bay. Certainly the southern sea of Mindanao, as well as the Joló sea, constitutes one of the most irregular and consequently most unstable regions of the archipelago.

SEISMIC CENTER OF SURIGAO.

The seismic region of this very active center extends not only throughout the peninsula of Surigao, but also to the islands of Siargao, Dinágat, and the southern part of Sámar and Leyte. In this region no active volcanic centers exist, excepting the Maínit Lake, situated south of Surigao at 9° 28′ north latitude and longitude 125° 33′ east of Greenwich, and supposed to be the crater of an extinct volcano. Doctor Montano, who visited this lake, says: "It is situated in the crater of an ancient volcano. It is circular in form and has steep banks. Near the shore the ordinary depth is 60 feet and more than 600 near the center. The amount of the water in it sometimes increases very suddenly. But the most certain sign that there is a volcanic center is the sulphurous thermic springs issuing from and around the lake." According to the same Doctor Montano some recent volcanic rocks are to be found in the neighborhood of this lake, but he states also that on the eastern shore there is a compact limestone formation through which there are many open caves. Many of the most violent earthquakes felt in this region have been referred to the supposed volcanic center, and certainly in many cases they were most severe in the villages close to it. Doctor Montano records that in all the abovementioned limestone caves there are many fissures and overthrown bowlders, probably due to the earthquakes. The earthquake felt in July, 1879, probably the most violent recorded in the last few centuries, had certainly, according to Centeno's report, its epicenter in

Maínit Lake. It propagated northward mainly through the mountain range, ending in Bilán Point, the northern extremity of Mindanao. This earthquake caused many important displacements. Mr. Centeno, who visited the place some days later, reports two visible subsidences; a submarine one in the Bilan-bilan port, east of Surigao, and the bodily sinking of a valley measuring some 5,000 feet in length and 1,000 in width. This valley, which is situated to the southwest of Bilán Point, sank some two feet.

At the north end of the range near Bilán Point wide fissures were produced in the rocks; a little south, but not far from Surigao, many landslides took place in the alluvial banks and sandstone hills in the direction of the Cansuran river. This earthquake was the beginning of a long seismic period lasting until the end of the year 1881. The seismic records at hand, which since the year 1870 are accurate, show that the years 1878, 1879, 1880, and 1881 may be considered as a period of great seismic activity in this region. The stronger earthquakes are usually preceded by a strange rumbling sound. We will mention in the following list a few of the more violent earthquakes felt in this region:

TABLE 4.—*Earthquakes of the Surigao region.*

YEAR.	Month.	Day.	Hour.	Remarks.
1836....	January	3	.....	Felt almost throughout the whole island.
1871....	November..	5	9.00 a. m.	The shock felt over a wide area, comprising Mindanao and the eastern Visayas, although it was destructive only in the district of Surigao.
1871....	December ..	19	10.30 p. m.	Felt along the Pacific coast of Mindanao from north to south.
1878....	September..	14	1.00 p. m.	
1879....	July	1	2.38 a. m.	Caused great havoc throughout the country, and was the commencement of a long and very active seismic period, lasting for more than a month.
1885....	February...	22	3.30 p. m.	This also affected all the coast of Mindanao along the Pacific mountain range from Surigao to Cape San Agustin.
1889....	October	6	11.06 a. m.	The destructive force extended more toward the south than toward the north.

VOLCANO OF CAMIGUÍN.

The small island of Camiguín lies near the north coast of Mindanao, between 9° 42′ and 9° 14′ .7 north latitude and longitude 124° 39′ .7 and 124° 47′ .4 east of Greenwich. It consists of a single range of mountains, apparently a prolongation of the central range of Mindanao, its northern extremity forks, forming the two ridges of Catarmán and Mambájao. The island is Y-shaped, with the base lying southeast. Three principal peaks rise rather sharply, and are supposed to be extinct volcanoes. The whole island is famous for its great fertility, shown in the exuberant vegetation which covers even its steepest hillsides. Plantations of abacá are seen everywhere, even on the

N
Visita Agrio
Volcano
Pueblo viejo
de Catarman
Catarman
o Gulob
W
Marobajao
E
Maginoc
Sagay
S
CAMIGUÍN ISLAND CATARMÁN VOLCANO
124° 42′ Long. E. Greenwich, 9° 12′ Lat.
Approximate Scale
0 1 2 3 4 5 6 7 8 9

almost inaccessible slopes. Close to the foot of Mt. Catarmán, to the west and near the seashore, rises the active volcano, which was in eruption from 1871, when it first broke forth, until the year 1876. Adhering, as it were, to the side of the mountain, and in a spot that was formerly an extensive depression, it rises to the height of 1,499 feet above the sea, with a base measuring more than 3,000 feet in diameter. This small volcano, known abroad as the Catarmán volcano, is merely a recent mouth or crater of the gigantic and much older one that has been dormant for many centuries, but which now seems to be waking up.

Condition of the Camiguín volcano previous to 1871.—Besides the solfataras that have made their appearance in recent years, its conical form and the nature of its rocks give sufficient data for classing Mt. Catarmán, which rises 6,000 feet above sea level, as an ancient volcano. The conic shape, the massive blocks of basalt, claystone, and andesite, many of them resembling the volcanic bombs thrown out by the volcano Mayón, afford solid foundation for such an opinion. These blocks are found scattered throughout the fields, almost down to the madreporic formation of the coast. The soil, blackish in color, also shows a mixture of the above materials, together with other fragmental ejecta. No eruption of this mountain is reported in the history of the islands, nor is there any previous mention of any signs of activity in the mountains of Camiguín Island. There are in the library of the Manila observatory some old documents of unknown origin, probably consulted by Mr. Jägor before he published his book in 1873, wherein it is stated that on top of Mt. Catarmán, occupying an old crater, there existed a lake of some 600 meters in circumference, the water level in which was subject to such fluctuations that at times the lake became practically dry, while at other times the water overflowed the containing walls. The crater, moreover, was sometimes seen in a violent state of ebullition caused by the escape of gases from the bottom of the lake. It is also reported that at Catarmán, Mambájao, and other towns confused rumbling sounds and detonations were at times heard, which were usually referred to some of the neighboring volcanoes of Mindanao. Thus all reports of this volcano previous to the year 1871 are vague and uncertain, though there can be no doubt that in past ages it must have been one of the most active and powerful volcanoes in the archipelago.

The Camiguín eruption of 1871.—In the first months of this year, about February 16, earthquakes became very frequent; shortly after the inhabitants of Mambájao and Catarmán became convinced that the radiating center of the seismic disturbance was located in their little island, and not very far distant in the same mountain, whose fertile side, covered with verdure, had never been suspected of harboring a

dangerous enemy. An eyewitness of the events, the presidente, or capitan, of Catarmán, thus describes the beginning of these disturbances:

On February 16 at 1 o'clock p. m. a slight shock was felt, which was repeated at 7.30 p. m. of the same day. On the 17th at 9.30 a. m. another and stronger shock was experienced, after which moment there began a series of tremors that continued throughout the day and the following night. Great alarm spread among the inhabitants. On the 18th, shocks were felt at shorter intervals than on the preceding days, so that the earth seemed to be in continuous vibration. At 6 p. m. a very strong shock came. During the night there was no change, except that at 11 p. m. another very strong shock was felt, and that each distinct shock was preceded by rumbling noises, which seemed to come from the mountain to the east of the town. This last fact, together with the rumor that on the northern slope of this hill a wide fissure had been opened, which had produced heavy landslides, gave rise in the minds of the people to the idea that an eruption might take place from any of the mountains of this island. On the 19th the shocks became stronger, and during the stillness of the following night the noise produced by the heavy stones rolling down the slopes of the mountain after the shocks could be heard at great distances. On the 21st at 4 o'clock a. m. a violent earthquake shook the island, causing considerable damage to the stone buildings. On the flank of the mountain the sight was dreadful. The rolling masses of stone were destroying trees and plantations, while the opening of fissures caused a noise like that of a great storm. The inhabitants of the town were terrified and from this moment began to escape in their boats to the neighboring coasts of Mindanao and Bohol in search of safety.

From the above the reader may form an idea of the events which announced the eruption of 1871. During the months of March and April earthquakes succeeded one another with the same frequency and were accompanied by effects identical with those just described. The active area of some of these earthquakes was very extensive, for they were felt strongly throughout northern Mindanao and in the islands of Bohol, Cebú, and Negros. The inhabitants of the towns in the neighborhood of Mt. Catarmán, with the exception of a few of the bolder spirits and some of the very poor, fled from their houses. Hence it is that when the eruption actually took place it found very few victims.

At last the shocks suddenly ceased. When day broke on April 30, at the foot of Mt. Catarmán, which had been so shaken by the preceding earthquakes that it exposed its skeleton through the landslides and fissures, a column of thick vapor was seen rising up into the sky near the sea and about 400 yards distant from the town of Catarmán. This column of vapor disappeared completely some hours afterwards.

At about 7 p. m. of the same day a tremendous explosion was heard in the direction of the above-mentioned spot, accompanied by a dense cloud of smoke, which came from the same place. Everything roundabout was set on fire. At the same time a shower of stones, earth, and ashes was vomited forth from the recently made openings. The ashes rose to a considerable height, spreading out and reaching Cebú and

other islands 110 miles away. Within a radius of 2 miles from the new crater the destruction caused by the shower of fire, stones, earth, and ashes was almost complete; but fortunately there is no report of many human victims, evidently because the inhabitants of Catarmán, which the destruction reached, had fled in due time to safer quarters. The eruption continued for six or seven days, after which the paroxysm died down, but the silent flowing of the semifluid lava continued, building up a rough cone, which in two or three weeks' time measured some eight feet in height. Some travelers who visited the place a few weeks after the eruption gave us the following details:

The base of the volcano lies close to the shore and about 35 feet above sea level. The cone is becoming round and looks like a large burning limekiln. It consists of black stones stuck together by means of pasty incandescent lava. At present the base measures 1,500 feet in diameter. It is smoking, but there does not seem to be any stream of lava. The crater is simply throwing out a kind of paste or cement mixed with earth and heavy stones, which latter, rolling down the sides, cause explosions and emit gases in large quantities, so as to resemble so many small vents.

The crater continued in this quiet eruptive state during three years, constantly pouring out solid material. This material kept building up the sides of the cone, not only by being forced over the rim of the crater, but owing to the feeble emissive force from the interior, by accumulating on the interior surface and pushing outward the preceding ejecta that had not yet become hardened. The effects of this outward thrust were frequent landslides and fissures occurring on the sides, thus forming new escapes for the gases. Owing to the character of this eruption, which we might well call laborious, the cone gradually took on the form of a rough dome, which gained daily in height and in extent. Thus, four years after its birth, when it had become to all appearances perfectly extinct, it had reached a height of 1,900 feet, with a base nearly a mile in diameter.

Camiguín was visited by the *Challenger* expedition in 1875. It was then described as a dome 1,900 feet in height, without any crater, but still smoking and incandescent at the top.

With the same form, but completely extinct, it can be seen to-day rising out of the western slope of the steep green hill of Catarmán, appearing like a rough appendage to the mountain, scarred with fissures and covered with sharp rugged stones. From the above it may be seen that the true eruption, or actual throwing out of the ejecta, which forms the existing cone, lasted for a period of about four years. For some time afterwards gases and vapors were emitted continuously; later on only at intervals, until at last such action ceased altogether and the volcano lost all signs of activity and heat. Such has been its condition for the last twenty years, and thus it stands to-day, exposed to the destructive influences of the atmospheric elements, which in this climate have a powerful effect.

OUTLINE TAKEN FROM SEA LOOKING SOUTHWEST.
PREVIOUS TO APRIL 30th 1871.

AFTER APRIL 1871.

A - SOLFATARA APPEARED, 1897.
B - " " ON JULY 27th, 1902.

Appearance of new solfataras in 1897 and 1902.—After centuries of inaction (just how long is uncertain) the main cone or hill of Catarmán, upon which the above-described crater leans, began in 1897 to show signs of awakening. From the previously mentioned crater lake, at the top of the mountain, there began to issue a constant column of white sulphurous vapor that killed the neighboring vegetation, and even destroyed the plantations that existed on the northeastern and southwestern slopes of the hill. I have been told by some gentlemen of Mambájao that when the winds are from the northeast and the vapors are blown down the southwestern slopes of the mountain, the leaves of the trees fade and drop, the earth is made bare of vegetation, and the branches become covered with a kind of sulphurous powder. But when the wind changes, and a little rain has washed the powder away, the trees and earth again don their green dress. The accompanying sketch was made in the month of July, while the southwest wind prevailed. Thus a view of the northeast side is presented, which was then of a brownish color. According to the gentlemen above referred to, no earthquakes nor other unusual events preceded the appearance of the new solfataras of 1897. But it must be remembered that this year was noted as one of extraordinary volcano-seismic activity in the archipelago. It was this occasion that called forth from Father Coronas, S. J., the two valuable pamphlets, La Erupción del Volcán Mayón el 25 y 26 de Junio de 1897 and La Actividad Séismica en el Archipiélago Filipino durante el Año 1897. In the latter he points out the radiating centers of the different seismic periods reported up to the end of the year: That of Zamboanga, September 21; that of Sámar, October 19 and 20; and another lasting till March, 1898. The appearance of the new fumaroles of Camiguín must probably be referred to one of these seismic periods, although this volcano has apparently never been the radiating center of any of the more important earthquakes of this year. Probably some of the feeble shocks felt at Cebú, Negros, and Iloílo were connected also with this volcanic center.

Up to July, 1902, no further change had been observed in the mountain. A cloud of white vapor, more or less thick according to the degree of humidity of the atmosphere, was continually rising from the summit, and that was all. The inhabitants of the neighboring towns looked at it without the least anxiety or fear. However, on the 9th of said month, between 2 and 3 o'clock in the morning, hollow sounds were heard which seemed to proceed from the mountain. But when day broke no change was noted in the appearance of the volcano. During the night of the 27th, at about 1 o'clock a thunderstorm was heard rumbling about the mountain and when day broke the people were surprised by the sight of a new solfatara that was seen issuing from a fissure near the summit, on the opposite side

from the old one and separated from it by the large crest that forms the eastern ridge of the ancient crater. It is not known whether any rumbling sounds preceded the bursting out of the new solfatara, or if these were confounded with the rolling thunder of the storm. I happened to reach the port of Mambájao on board the steamer *Aldecoa* at 7 o'clock on the morning of the 27th, and was astonished at being shown the new solfatara and being told that it had appeared only the night before, during the thunderstorm. I can certify to the fact that when I arrived the vapor was issuing in a thin white column from only one fissure extending downward from the top; but three or four hours later vapors were also rising from a little depression that ran horizontally farther to the right; later on during that day, and during the next, when I left Mambájao, no further change could be observed. We received a letter from Mambájao, dated September 8, in which we were told that the fumaroles that appeared on July 27 disappeared within eight or ten days; but that on the other hand, since their disappearance, frequent subterraneous sounds had issued from the volcano.

ISLAND OF CEBÚ.

In this island, where the most important coal region of the Philippines is located, there is no seismic center. The few earthquakes that have been felt there have probably radiated from seismic centers situated in other islands. The most violent were those which came from the volcano of Camiguín. An earthquake occurred on the 6th of December, 1882, causing damage to the buildings of Bantayán, a village situated in the north of Cebú. Another violent earthquake occurred on the 23d of July, 1885, at 10.55 p. m., its center being near Dapitan (Mindanao).

SÁMAR AND LEYTE.

From the scant data obtained from these two islands it is difficult to ascertain whether the radiating center of the earthquakes felt there is situated within or without the islands; whether, for instance, the shocks come from Mayón in the north, or from Surigao in the south. There is no doubt that the Mayón earthquakes more frequently exert their influence in the direction of these islands than in that of Ambos Camarines. A certain repetition or extension of the seismic action of the Mayón earthquakes has also been observed in the islands of Leyte and Sámar, and even in Surigao. The only signs of the volcanic activity found on these islands are certain solfataras or sulphuric emanations. Mr. Becker summarizes the volcanic vents of Leyte and those of Biliran and Maripipí, lying north of it, as follows:

In the island of Leyte there are two volcanic vents in the solfataric phase from which much sulphur has been gathered. They lie to the southward of Buranen, in the northeastern portion of the island, and were visited by Jägor. The more south-

erly is called Mt. Danán. The other is called the crater of Kasiboi, and lies, according to Jägor, on a mountain named Manacagan. This mountain, on Mr. d'Almonte's map, is called Himaiacagan. Jägor describes the rock as "very hornblendic trachyte." It is probably the rock determined by Roth as hornblende-andesite. Roth probably refers to Kasiboi when he states that the outflow of the solfatara at Dagami (some miles north of Burauen) forms a brook with a temperature of 50° Réaum. = 145° F. The Guía Oficial mentions a volcano at Burauen called Caolangojan, which, I suppose, is another name for one of those just referred to.

The island of Biliran is well known for its sulphur deposits, the best in the archipelago. The sulphur occurs in solfataras, some of which are extremely hot, Mr. Abella getting temperatures of no less than 115° C., which would show that the water is a strong solution of some salts. These hot springs contain pyrite of recent formation "produced by the reducing action either of an excess of sulphur or of vegetable remains, brought by water or wind, on the iron sulphate which had previously formed." Mr. Abella says nothing of craters, but refers the solfataras to still existing volcanic action. He compares the phenomena on Biliran to those near Burauen in Leyte, and calls attention to the fact that the volcanic range continues southward through Panaón to Surigao, Mindanao, while to the northward it is connected through Maripipí and other small volcanic islands with Bulusan on Luzón. Maripipí, by the way, is represented by Mr. d'Almonte as a conical island, almost round, about 3.5 miles in diameter and 3,000 feet high. Its plan is very much like that of a volcanic cone. The chief rock of Biliran is described by Mr. Abella as containing greenish and black hornblende and phenocrystic feldspars in a feldspathic ground-mass, while augite and magnetic iron are sometimes visible. This description makes it substantially certain that the rock is hornblende-andesite.

Not far from Maasin there are some sulphurous springs and it is stated also that near Cabalían lies an active solfatara.

The destructive earthquakes which shook these islands during the past years are the following:

TABLE 5.—*Earthquakes in the islands of Sámar and Leyte.*

YEAR.	Month.	Day.	Hour.	Remarks.
1868....	April	4	.....	Violent in Leyte. What occurred in Sámar is unknown.
1869....	August	16	3.00 p. m.	Long seismic period commenced. The only destructive earthquake was that of the 16th of August; its greater violence was felt in Masbate, where, in addition to the ruin caused to buildings, the earth was rent with long, deep crevices, and small islands even are recorded to have disappeared in the region north of Ticao. Information is lacking from Albay, where the shock was probably still more violently felt.
1870....	March.....	2	3.00 a. m.	Not destructive, and felt more in Sámar than in Leyte.
1873....	March.....	19	1.00 p. m.	Area of action small, and the only damage caused thereby was in the pueblo of Mercedes (Sámar).
1877....	July	23	4.24 p. m.	Violent, especially so in Leyte.
1890....	February...	7	0.40 a. m.	More violent in the north of Sámar than in the island of Leyte.
1897....	October.....	19	8.05 a. m.	Destructive in the northeast of Sámar.

WESTERN MINDANAO AND THE VISAYAS.

This southwestern district lies south of 12° north latitude and west of the meridian 123° 30′ east of Greenwich, and comprises the western portion of Mindanao, the Joló and Mindoro seas, and the islands of Negros, Panay, and Paragua. There are few important seismic foci in this district.

SEISMIC CENTER OF ZAMBOANGA AND JOLÓ.

The seismic area of this center comprises the most westerly part of Mindanao or the southwestern region of the peninsula united to the rest of the island by a narrow neck of land between Panguil and Illana bays. The Zamboanga and Joló earthquakes rarely extend their influence beyond the said western peninsula, owing partly to the configuration of land and perhaps more especially to the distance of the center which is situated in the sea north of Joló archipelago. Consequently Zamboanga is located between two submarine centers, viz, that very probably situated in Illana bay and the center in the Joló sea. The existence of this latter volcano-seismic center was determined with certainty, in the year 1897. In the old chronicles there is mention of an eruption which took place in some island of the Joló group; there is a report of an earthquake and eruption in the land of the Igorot, northern Luzón; and of two others, which occurred at the same time, one at the Sanguil volcano and the third at Joló. The record says:

And although at the time the darkness and atmospheric disturbances were so great that the people of Joló could not perceive whence came the stuff which fell from heaven upon them, yet when it became light it was observed that at the same time when the volcano burst forth at Sanguil, Mindanao, the elements there also had become excited, and that a second volcano had opened on a small island which lies opposite the bar of the chief river of Joló, where is our military station.

The crater of this volcano is still open. Doctor Becker says:

Semper and Jägor are of the opinion that such an eruption really took place, but no further outbreak is known to have occurred there, and the remains of the crater have not been described of late years, so far as I know.

The charts show crater-like depressions at the southern end of Cagayán Joló, one of them broken down at the edge and admitting the sea. Capt. Charles S. Perry, U. S. Navy, who landed there to raise the American flag, informs me that these are unquestionably craters, but that they are to some extent covered with vegetation and can not therefore have been active very recently. They seem first to have been recognized as craters by Mr. F. H. H. Guillemard.

The origin of the earthquakes of 1897 must be placed in the sea of Joló not far north of this island; the damage to buildings, the displacements and fissures produced on land, and the waves on the sea were tremendous. Father Coronas, S. J., gave all the details of this great disturbance in a pamphlet published soon after the event.[1] Omitting the description of the damage done to buildings and the fissures opened, especially those near the seashore at Zamboanga, Basilan, and Joló, we will deal with the tremendous movements of the sea. The memorable sea waves observed after the earthquakes of Lisbon, Calabria, Chile, and Peru, as well as those which occurred after the eruption of Krakatoa, were renewed in this district. The destructive

[1] La Actividad Seísmica en el Archipiélago Filipino durante el Año 1897.

shocks occurred on the 21st of September at 1.17 p. m.; two hours later another lighter earthquake was felt and immediately afterwards came the sea tides and waves. At Zamboanga the swell occurred two full hours after the big earthquake; many times the awful waves advanced rapidly into the town and even swept some places which were 20 feet above the sea level. Small crafts lying near the shore were thrown out and even some ships at anchor were carried to and fro. All the inhabitants began to flee to look for a safer place inland. All along the coast, west of Zamboanga, the waves invaded the shores with the same fury and on retreating swept away many native houses, not a few of which, unfortunately, were occupied at the time.

The island of Basilan experienced the same disturbance but sooner than at Zamboanga. The waves were higher than at Zamboanga, probably because the latter was protected by the flat island of Santa Cruz lying in front of its harbor. The waves began to rush against the island some thirty minutes after the earthquake, and swept away some Moro villages on the western coast, and the market and other houses situated near the wharf in the town of Isabela. The gunboat *Lezo*, at anchor in the harbor, was carried by the waves or flood and had a narrow escape. The waves advanced against the coast and retreated many yards beyond the tide line, with the same rapidity, at least thirty times. There were many victims. At Joló, the seismic tide began some fifteen minutes after the earthquake shocks. The first movement was an ebb, the water retreating farther than the low tide limit, then it rose again with tremendous fury, repeating the process six or seven times. No damage was caused at Joló by the waves, because their velocity and height was less than at Basilan and on the west coast of Mindanao. Extraordinary sea movements were noticed all along the southwestern coast of Negros, the western coast of Panay, the southern coast of Paragua, the eastern coast of Borneo, and one might say on all the islands and lands facing the Joló sea. Certainly there must have occurred some great submarine displacements or eruptions to cause such a wide perturbation. There is an event which is fully proved, namely, the sudden rising of a mud bank or island at Labuan, near the northwest coast of Borneo, on the same day and hour of the destructive earthquake. Mr. Van den Brock, a resident of Labuan, in a letter kindly sent to the observatory, gives the following details:

The dimensions of the island are as follows: Length, 750 feet; breadth, 450 feet; height, 45 feet.

As to the general aspect of this island which appeared from the depths of the sea, I may say that it is flat; still in the middle of it there is an elevation in form cone-shaped and in general appearance very much like a crater; and from it mud and clay come forth. The diameter of the lower part of the crater is some 180 feet. Inflammable gases are emitted from many cracks or crevices.

Another new island also appeared the same day, near Kudat, to the southeast of he island of Malundangan. It is rectangular in form, measures 360 feet in length,

300 feet in breadth, and but 3 feet in height. This island according to what the natives say, rose from the sea during the morning of the same day, the 21st. They saw the waves approach; they felt a strong and violent wind; they heard a loud noise; and in an instant the island rose on the spot where before the sea had been more than 20 feet deep.

In this letter there is not the least indication of any sea movement; the seismic shocks were felt there but lightly, so that the rise of these islands does not seem to be the cause of the perturbation experienced in the Joló sea and, therefore, there must have occurred some faults or displacements which produced it. Some days later the newspapers of the Visayas published a letter from Joló in which it was stated that some Moro mother-of-pearl shell fishers reported that the island Dammi, lying between Siassi and Tawi Tawi, disappeared during the earthquake and in the island of Tubigon, near Pañgutáran, a crevasse or channel was opened dividing it into two parts. Although these data are not entirely trustworthy, still big displacements must undoubtedly have taken place in the Joló sea north of the Joló group and west of Zamboanga and Basilan. At Zamboanga, owing to the fact that the highest wave came almost simultaneously with the second violent earthquake, it was believed that some displacement or fault had occurred very near. Not only through the plains but also on the northern mountain slopes the ground remained badly fissured and great landslides were produced.

The disturbance which occurred on the 21st of September was a very macroseismic one, since the vibrations produced were registered all over the world by the microseismographs. Afterwards this region remained in a very unsettled condition as is shown by more than 500 very perceptible shocks felt during the following eighteen months; weaker shocks during this long period were countless. As has been indicated in the introduction, these south seas are considered an unstable region, the suboceanic disturbances being very irregularly distributed; but the history of the islands does not show any disturbance similar to that just described. Further details and conclusions may be seen in the pamphlet of Father Coronas. The most violent earthquakes recorded for this region are the following:

TABLE 6.—*Earthquakes in the seismic center of Zamboanga and Joló.*

YEAR.	Month.	Day.	Hour.	Remarks.
1871....	November..	29	4.30 p. m.	Caused slight damage to buildings.
1874....	August	25	6.30 a. m.	Damaged buildings, and the ground was cracked on all sides.
1885....	July	23	10.45 a. m.	Very violent.
1889....	February...	2	4.30 a. m.	Apparently radiated from a submarine center toward the east.
1897....	September..	21	1.17 p. m.	This earthquake was a very remarkable one.

SEISMIC CENTER OF PANAY.

Although many earthquake shocks felt in this island can be referred to the volcano seismic centers of the neighboring island of Negros, nevertheless there exists in the southeastern part of Panay a well-known seismic center. Many violent earthquakes, which were mainly felt in the Iloílo province, had their origin in this center. The last one occurred on the 26th of August, 1902. We will transcribe here the report written on that occasion referring to the location and conditions of this center. It seems to belong to those called by Milne macroseismic centers.

From the data at hand, then, we would locate the epicenter at the foot of the abrupt and rugged abutments of the eastern side of Mt. Tuaman or Duyan, and Mt. Tiguran, which are found deeply scarred by any number of streamlets and torrents that rise in the mountains, flowing thence into the Tigón and Aganan, which in turn pour their waters into the Sálog, which empties finally into the sea at Nagtacán.

The surface of this region is very wild and rugged and is composed of Tertiary formations; conglomerates and calcareous or limestone formations predominate, with underlying arenaceous and argillaceous beds. These latter beds contain considerable amounts of lignitic and carbonaceous matter in many places. Inflammable gases arise from these beds at various points, the best known being those at Igpalang creek, and at the spring or well at the barrio of Binalod. At other points there are outcrops of salt and numerous salt springs, the water of which, being more or less saturated with sodium chloride, the poor people utilize by evaporating it and obtaining the salt for domestic purposes. Such a constitution of the soil under the circumstances indicates that the soil there is not of the firmest consistency and is liable to cave in at times and to be subject to other disturbances.

There are at present very few manifestations of volcanic action in the island of Panay, and these are confined to a number of thermal mineral springs that are situated at great distances from the region of which we have been speaking.

OTHER EARTHQUAKES OF PANAY.

If we look backward through the years we notice that there are very few important earthquakes on record as having been felt in this island. The first and most disastrous one recorded occurred July 13, 1787. All the houses in the province of Iloílo were almost completely destroyed; nothing was heard from the other provinces. In these later years there were some very violent ones; for example, the one of July 11, 1881. Those living at the time had never experienced one of equal intensity. Others occurred on February 12, 1885, April 10 and October 29, 1886, January 25 and February 2, 1887; this last one did some damage to the buildings. Another took place on July 20, 1889. It should be noticed that, with the exception of the earthquake of February, 1887, which was felt with great violence all over the island of Panay and in the neighboring island of Guimarás, all these earthquakes seem to have been felt more violently in the province of Iloílo. Secondly, in nearly every case, even in the case of those that would scarcely be denominated violent earthquakes, they were either preceded or accompanied by subterraneous sounds.

VOLCANOES OF CANLAÓN AND MAGASÓ.

The volcanic vents of the island of Negros are thus described by Doctor Becker:

On the island of Negros there are two volcanic vents. One of these is a very small affair at the southern end of the island, some 10 miles from Dumaguete, on the southeastern slope of the Cuernos de Negro. It is called Magasó. I was told in Dumaguete that vapors arise from a small crater-like vent, and that there are cracks in the hot rock in which a stick will inflame. There are sulphur deposits and strong sulphur springs at its base. The Cuernos are largely, so far as I know, wholly andesitic. The volcano of Canlaón is in the central range of the island, of which it forms a culminating point. It lies in latitude 10° 24′ 35″. The upper part of the mountain has the typical form of a volcanic cone, but this portion rests upon a more irregular mass, which forms a portion of the range stretching northward for some 30 miles. The Spanish hydrographic office gives the elevation at 8,192 feet, so that it would rank with Datá and be exceeded only by Halcón, Apo, and Mayón. It is visible from near Iloílo and can be seen even from vessels cruising on the eastern side of Cebú. From the sea on the western side of this island, called Tañón Passage, Canlaón is a very impressive spectacle, for, in addition to the picturesque form of the cone, steam is always pouring out from at least two vents at the summit. No violent eruptions are remembered, but ash has been ejected from time to time. The last considerable ash fall occurred, as I was informed at San Carlos, in July, 1893. There was also an eruption in 1866. Andesite is the prevailing rock of this region, as shown by the stream pebbles, and I suppose Canlaón andesitic. On some Spanish maps and in Jägor's Travels this mountain appears under the name Malaspina.

In May and June, 1894, ashes fell on many towns around, and more recently, on the 31st of January, 1902, the volcano was throwing out fluid lava during the night in the midst of a display of light. An earthquake, not very violent but perceptible at a distance of many leagues, coincided with the outflow of lava. In May, 1902, in the region of the solfataric volcano Magasó, there was a seismic period which lasted some days, with frequent earth movements of no great intensity, while at the same time an extraordinary increase in the amount of gases emitted by the volcano was noticed. Owing to the scarcity of records of earthquakes felt in the island of Negros, it is impossible to know the seismic activity of these centers. In the year 1896 Mr. Mencarini, a well-known publicist in the Far East, ascended the volcano of Canlaón, reaching the wide terrace where the lowest solfataras issue. He took, also, some photographs, but a coming storm prevented further examination.

SOUTHEASTERN LUZÓN.

This region forms the third meteorological district, and extends northward from parallel 12° north latitude, and eastward from the meridian 122° east of Greenwich. It comprises the southeastern part of Luzón, including Ambos Camarines, Albay, and Sorsogón, and the islands of Catanduanes, Ticao, Masbate, and Burias, and the northern part of Sámar. In this district is situated the most active volcano and one of the main seismic centers of the archipelago.

VOLCANO OF MAYÓN.

We think it best to repeat the description of this volcano made by Doctor Becker in summarizing those of Mr. Abella and other authors:

Mayón, or the volcano of Albay, is, next to Taal, the most famous Philippine volcano. It is possibly the most symmetrically beautiful volcanic cone in the world, and at times its crater is almost infinitesimal, so that the meridional curve of the cone is continuous almost to the axis. The height has been variously determined, and appears to change with each eruption. Since the crater always remains small, the height should tend to increase, but the determinations are probably not sharp enough to develop this tendency. Jägor's barometrical measurement in 1859 was 2,374 meters. The Spanish Hydrographic Commission, according to Mr. Abella, gives 2,522 meters. Mr. d'Almonte's map of 1883 gives 2,527 meters. Mr. Abella himself gives 2,734 meters, but he did not reach the summit, because his visit was made during the eruption of 1881–82, and does not state his means of determining the height. Mr. d'Almonte, however, made a sketch map of the mountain for Mr. Abella's memoir, and I fancy that he measured the height by triangulation. In English measure Mr. Abella's elevation would be 8,970 feet. The rock of Albay is described by Roth and von Drasche as dolerite, but Mr. Oebbeke regards it as an olivinitic augite-andesite.

Albay has had a vast number of eruptions. Father Coronas gives some details as to eruptions in 1616, 1766, 1800, 1814, 1827, 1835, 1845, 1846, 1851, 1853, 1855, 1858, 1868, 1871, 1872, 1873, 1881, 1885, 1886–87, 1888, 1890, 1891, 1892, 1893, 1895, and 1896, and he describes the eruption of 1897. According to the newspapers, there was an eruption early in 1900. Some of these eruptions have been very serious. In 1814 about 1,200 lives were lost (Jägor, by error of transcription, says 12,000), and the country was covered with ash. Many picturesque details may be read in Perry or elsewhere. Of more permanent interest than the destruction of life and property is the character of the emanations. Mr. von Drasche, adopting Stöhr's hypothesis of three periods in the life of a volcano (first, that of lava flows; second, that of agglomerate flows; third, eruptions of ash), considers Mayón in the second stage, and says that the ash eruptions are seldom interrupted by small lava flows from the summit. Mr. Abella states from observation that the ash ejections are small and preliminary to extensive flows, and Father Coronas gives a map of the flows of 1897, when lava from the summit poured down in various directions, even reaching the sea at a horizontal distance of about 6 miles from the crater. In 1897, however, there was much ash as well as flowing lava. An area of about 4 square degrees was covered with ash, which, nevertheless, formed an orogenically insignificant layer at points considerably removed from the foot of the mountains. At Tabaco, less than 10 miles from the crater, the inhabitants were reasonably in fear of smothering, but the ash which fell was only 3 or 4 centimeters in depth. Per contra, on the mountain side, the fall was heavy; the village of San Antonio, more than 4 miles from the crater, was so buried under lava and ash that the ridgepoles of the houses were hidden. It would appear from the descriptions that a very considerable part of Mayón consists of a solid framework of lava flows, which alternate more or less irregularly with ash eruptions, but that the external form of the mountain is determined by showers of ash and coarser fragmental ejecta. I can hardly believe that there is ordinarily any such regularity in the life-history of a volcano as is implied in Stöhr's hypothesis. Study of the history of Mayón and comparison with other volcanoes show that the form of the vertical cross section is a definite one (depending on the resistance of the material to crushing), and it follows that the material ejected during any considerable eruption is so distributed that the vertical depth of the added layer is substantially uniform from the summit to the base. Of course, more material

MAYÓN VOLCANO, PROVINCE OF ALBAY.

falls near the top than near the bottom, but more rolls down from the steeper slopes of higher portions than from the gentler slopes near the foot. If each particle were to remain where it fell the slope would become steeper at each eruption and the mountain would tend toward the shape of a cylindrical column.

Some months after the eruption of 1766, in October, havoc was produced by a typhoon. It is reported in a letter of the alcalde of Albay as a new, awful eruption, but all probabilities induce us to believe that there was no eruption at all. "Although in this letter and in other old accounts," says Father Coronas, "all the damage is attributed to a terrible eruption, nevertheless it seems certain that it was due to the extraordinary violence of one of these giratory storms known in these regions by the name of 'baguíos,' which, with the fury peculiar to them when near the vortex, threw down from the sides of the mountain immense quantities of lava and loose stones, which fell upon the plain and over the neighboring towns and completely covered them." A similar storm is reported to have taken place on the 31st of October, 1875, in which, according to Mr. Abella, the effects of a strong baguío were felt, which caused the death of 1,500 people and enormous damage, greater, indeed, than any of the volcanic eruptions.

The eruption of 1814 is reported by the parish priest of Guinobatan as follows:

Repeated earthquakes took place the night before, and they continued during the morning of the 1st. There was then a stronger shock, and at the same moment a cloud of smoke rose from the mouth of the volcano. The cloud rose in the form of a pyramid and then assumed a feathery appearance which was very beautiful. As the sun was shining the phenomenon presented varied colors. The top was black, the center took on various colors, while the sides and lower part appeared of an ashy tint. While we were watching this, we felt a strong earthquake, which was followed by loud noises and rumblings. The volcano then continued to vomit forth lava, and the cloud extended till it darkened the whole district, and then sparks and flashes seemed to come from the ground and from the cloud, so that the whole presented the aspect of a most terrible storm. There followed almost immediately a rain of large, hot stones, which broke and burnt whatever they fell upon. A little later smaller stones, sand, and ashes were thrown out for more than three hours. The towns of Camálig, Cagsaua, and Budiao were entirely destroyed and burnt, and the towns of Albay, Guinobatan, and Bulusan but partly destroyed, because the eruption was not on that side of the mountain, and also because the wind was from the south. The darkness caused by the eruption was noticeable as far as Manila and Iloflo, and, according to some, the ashes erupted passed as far as China.

An account of what happened during other eruptions, which caused much loss of life, may be seen in the list of the eruptions which we give a little further on. We reproduce the notice of the last eruption only, which occurred in March, 1900. This notice was kindly sent to the observatory by Col. Walter Howe, of the U. S. Vol. Infantry:

I have the honor to report an eruption of the volcano Mayón (8 miles from Legaspi), commencing on March 1, in the afternoon about 2.30. At this time the ejection of large stones could be seen with the naked eye.

The eruption fluctuated from time to time, but gradually grew worse, until large streams of red-hot lava could be seen at night flowing down the mountain. One of these streams apparently has reached the sea about 6 miles from here. For one day and night the eruption was accompanied by a rumbling noise, at times increasing to a roar, which was very terrifying. All the houses in Legaspi shook, windows and doors rattling. On the morning of March 3, this vibration and noise was very trying; there was no wind, and the clouds of smoke only could be seen, reaching far into the heavens, perhaps 5 miles or more above the top of the volcano. This spread out and covered the town; the sun became obscured, and a thin cloud of ashes fell constantly. It cleared in the afternoon sufficiently to show about one-half the crater at sunset, but the rumbling and roaring, with the flow of lava, continued all night.

This morning (March 4) the eruption seems to be practically over, although smoke obscures the mountain, and steam is still rising from the hot lava.

The volcano of Mayón has been ascended and examined many times since the Conquest. Early in 1592 two Franciscans made the first ascent, but they did not reach the summit being prevented by two mouths or small craters, so turned back, after gathering some samples of sulphur. In May, 1823, Capt. D. Antonio Linguienza reached the summit. He wrote a report of this ascent for a scientific society of Spain, for which he was rewarded with a silver coin or medal. Later on, two Scotchmen made another ascent. Mr. Jägor, in 1859, and Mr. von Drasche, in 1876, ascended and examined the summit, being the first who gave a full description and some views of the crater.

Mr. Abella says in his report that there were many Spaniards and natives in the towns about the volcano who had made the ascent. There was one among the guides of Mr. von Drasche who had reached the summit on three different occasions.

Quite recently (in 1902), a party of Americans made the ascent and took many photographs of the crater.

Concerning the form and state of the crater, Mr. Abella writes as follows:

From the descriptions of those who have written on the subject, it would appear there was not a true hollow crater, or that, if there had been one, it has been filled up with the material from the interior.

What can be seen at the present day, either from the two towns or the slopes of the volcano, or from the sides when we saw it, is a sort of enormous sieve, formed by the fragments of large stones piled on top of one another, through the crevices of which many little jets of vapor are rising. When these jets of vapor unite they form the immense feather-like cloud on the top of the volcano. It would appear, however, the only mouths which emit lava are the secondary ones on the south of the mountain, especially if we fix our attention on the vegetation on the sides of the volcano. Toward the south the vegetation stops at a height of 700 meters above the level of the sea, while on the north and west sides it grows up to the very crater.

This would seem to indicate that the products of the volcano have not been thrown out in these directions for a long time past. Moreover, on the north side the ground is much firmer and more solid, and is not fissured as the south side.

TABLE 7.—*Eruptions of the volcano of Mayón.*

YEAR.	Month.	Day.	Hour.	Remarks.
1616				The most ancient eruption reported, but without precise date or any remark.
1766	July	20		It lasted six days, during which an immense column of ashes and smoke rose in the air and a stream of lava poured down the east side of the volcano. It is reported that some months after this eruption, in October, the heavy rainfall accompanying a violent typhoon carried down disintegrated fragmental ejecta, burying plantations and whole villages. A similar storm is reported to have occurred in October, 1825, which destroyed the lives of about 1,500 persons.
1800				Many, but not very destructive, eruptions.
1814	February	1		Dreadful eruption, which well-nigh buried under its streams of lava and ashes the whole country around the towns of Budiao, Camálig, and partially destroyed Guinobatan and Albay. About 1,200 lives were lost. The ashes were carried through the air as far as the coast of China, and the darkness produced by the clouds of ashes extended even over north Luzón. Since the year 1814 many slight eruptions have occurred, such as those of July, 1827, March, 1835, January, 1845.
1853	July	13		Eruption of very short duration. During three or four hours the crater belched forth smoke, ashes, and heavy stones, which, rolling down the steep slopes of the mountain side demolished many houses and killed 35 persons.
1855	March			Not violent.
1858				Lava flowed quietly from the summit during the greater part of this year.
1868	December	17		Small eruptions.
1871	do	8		Moderate eruption; some lava streams flowed eastward.
1872	September			This one lasted four days, accompanied by strong rumbling sounds. No loss of life or property.
1873	June	20		Longer than the preceding one, but of the same peaceful character.
1881	June	6		Very long, but weak; it began on the 6th of June and ended in August, 1882. The lava flowed from many crevices near the summit and was accompanied by rumbling sounds.
1885	November	21		Flows of lava on the south, southeast, and southwest sides of the volcano.
1886	February	8		Long eruptive period; lava flowed quietly, except on the 8th, the 22d, and 27th of February, 1886, and the 1st and 9th of March, 1887, when the manifestations increased, the crater hurling forth ashes, stones, and igneous vapors, with an accompaniment of rumbling sounds.
1888	December	15		Small and short eruption.
1890	September	10-30		Small and short eruption.
1891	October	3		Small and short eruption.
1892	February	20		A very noisy eruption, but not destructive; the flow of lava was very abundant and the summit of the crater was greatly deformed, the thin edges of which completely disappeared.
1893	October	4		Similar to the preceding one.
1895	July	20		Very weak.
1896	August	31		Very weak.
1897	June	25		Very strong eruption, lasting twenty-four hours. Great loss of life (350 victims) and property.
1900	March	1		Strong eruption, lasting four days.

Around the beautiful cone rise many small ones, described by Mr. Abella as follows:

The hill to the northeast, which dominates the town of Malilípot, has two or three tops, which are in a straight line. They are rounded, which might indicate that they were secondary cones which have been modified by the eruptions of Mayón. The same hill, Tancolao, situated to the southwest of San Antonio, has the form of a pointed cliff between the old and actual course of the river Quinali.

Toward the north it is an abrupt cliff, at the foot of which is the road from Tabaco to Ligao.

Very much like Tancolao, though much larger, is Liñgión, to the north of Albay. It is at the foot of the Mayón, though its formation is difficult to explain, as is also Tancolao; for even supposing them to be subordinate volcanic cones, it is very difficult to see how atmospheric action could modify them so much.

Northwest of Mayón rise the extinct cones, Isarog, Iriga, and Malínao. Isarog was ascended in the year 1903 by two American teachers, who, in their report to Hon. James Ross, governor of the Camarines, describe the crater as follows:

The crater rim is nothing but a knife-edge, but even on the very summit are large shrubs and small trees up to 25 feet in height. So dense is the vegetation that it was impossible to get an outlook in any direction without climbing into the trees and cutting away the smaller branches.

The crater was perfectly clear, though it was cloudy in every direction outside. The bottom of the crater is a comparatively level, wooded plain, almost circular, and about half a mile in diameter. I judge it to be about 2,000 feet below the general level of the rim. To get a better idea of the distances I fired two shots from a Krag carbine at a white spot on the upper part of the great landslide on the southwest side of the crater. With the sight raised to 2,000 yards, the ball fell below the mark. I then aimed over the top of the sight frame, and the ball still fell below, so the distance must be well up toward a mile and a half. A north-and-south line from rim to rim must be good two miles.

Contrary to the usual opinion, there is no such thing in the crater as a lake. From the foot of each of the two great landslides which fell from the rim to the bottom in March, 1902, runs a little stream. A third one appears to come from the cleft which, on the outside of the mountains, forms the canyon of the Maalsom river.

Mt. Iriga has not been examined, as far as we know. The Estado Geográfico also alleges that Iriga, in the province of Ambos Camarines, was in eruption in 1641; but Jägor gives seemingly good reason for believing that this statement, not to be found in earlier works, is a mistake. Many of the extinct cones retain traces of solfataric action, or at least give vent to hot springs.

Mt. Malínao is doubtless an extinct volcano; its crater is broken or opened to the north probably by the erosion of the waters which found their outlet in that direction. At the foot of the north side of this volcano the most remarkable solfataras and hot springs in Luzón are to be found; some of the springs here deposit siliceous sinter in various fantastic forms, and pyritous deposits of recent date also are found.

BULUSAN VOLCANO, LOOKING NE.

VOLCANO OF BULUSAN.

In the most southern part of Luzón, on the Strait of San Bernardino, lies the volcano Bulusan. Jägor calls attention to the striking similarity of its shape to that of Vesuvius. According to the Guía Oficial, its height seems comparable with that of Mayón. "At present it is nearly extinct, but sometimes emits aqueous and sulphurous vapors." The Estado Geográfico, page 314, states that it began steaming in 1852, after long seeming extinct. Around the foot of this volcano are many hot and mineral springs, especially on the eastern and southern sides.

Its crater is open to the southwest. Among the people there is the belief that this volcano shows greater solfataric activity when the Mayón volcano is in eruption. During the eruption which occurred in 1892, the Bulusan was steaming. Between this volcano and that of Albay there are many spots where the volcanic activity springs out. The hot spring called Manito near Pocdol mountain is a remarkable one. "The reddish hot waters," says Mr. Montano, "issue, forming a waterfall from an elliptic crater, the diameters of which measure some 400 and 200 feet, respectively. This spring is an intermittent one, the waters being pushed out by the vapors at very short intervals; their temperature is almost constantly 70° C."

This volcanic region, the most remarkable of the archipelago, is where the earthquakes also are very frequent. Many of the most violent ones have been of a clearly volcanic character, for they have either preceded or followed volcanic eruptions of the volcano of Mayón.

It has been observed on many occasions that within a few days after earthquake shocks have been felt in the Albay region, shocks are noticed in Sámar, Leyte, and Surigao, as if the disturbing force were spreading to the southeast along the volcanic belt, running to Surigao.

Besides the volcano seismic center of Albay, there seems to exist a seismic center near the island of Masbate, or between this island and the coast of Sorsogón and Albay provinces. The last outburst of this center occurred in May, 1897, a month before the great eruption of the volcano of Mayón, which took place on the 25th of June. In the following table we mention some of the most violent earthquakes felt in the southeastern region of Luzón:

TABLE 8.—*Earthquakes of southeastern Luzón.*

YEAR.	Month.	Day.	Hour.	Remarks.
1628....	.....	.....	.....	The precise date of the occurrence of this earthquake is unknown; it was destructive chiefly in Ambos Camarines.
1766....	July	20	.....	Eruption accompanied by violent shocks during several months.
1811....	October.....	5	.....	Long seismic period; the shocks felt on the 5th of October damaged many churches and other buildings in Albay and Ambos Camarines.
1855....	March	22	.....	Small eruption, accompanied by a violent earthquake, felt with force throughout Luzón.
1875....	May	19	11.30 a. m...	Felt more strongly in Ambos Camarines than in Albay.
1877....	July	5	0.07 p. m...	Very violent in Albay and in the islands of Masbate and Ticao.
1897....	May	13	7.44 p. m...	Destructive in the islands of Masbate and in some villages in the province of Albay.

CENTRAL AND NORTHERN LUZÓN.

This region, which forms the fourth meteorological district, extends from parallel 12° north latitude northward, and to the west of the meridian 122° east of Greenwich, thus comprising the whole of the main part of Luzón and the island of Mindoro. In the southern part of this district lie the active volcano Taal and the extinct ones Banájao, Maquíling, and Aráyat.

VOLCANO OF TAAL.

The volcano of Taal (14° 02′ north latitude and longitude 120° 57′ east of Greenwich) is a very remarkable one, and is readily accessible from Manila; it lies in the middle of Lake Bombón. One comparatively large crater and several other small extinct ones virtually form the island of Volcán.

The most important of the secondary cones is the Binintian Malaquí, forming the northwest corner of the island; it is a well-shaped but truncated cone, and is cut through the western side by a crevasse, which serves as an outlet; on its interior and exterior slopes many layers of volcanic ejecta can be distinguished, corresponding to different eruptions. Not only in the bottom of the crater but also at the western foot of the cone near the lake there is still some activity, manifested by ejections of sulphurous vapors. The flat bottom of the crater is only some 500 feet above the waters of the lake, while the remaining ring or ridge reaches in the southwest to a height of 860 feet, or some 300 feet from the bottom. The diameter of the bottom is some 660 feet.

The Balantoc crater, southeast of the last one, has an elliptic form, the longest diameter measuring more than 1,400 feet; the highest point of its borders rises to some 450 feet. This crater is also broken on the west. There is not the least sign of volcanic activity, and the mingled volcanic ejecta, disintegrated from the bordering ridges, is filling the bottom, and vegetation is growing well. Close to this crater to the south, in a space of not more than one square mile, there are the numerous craters known by the name of Cauas; all are of circular form, some 450 feet in diameter. Many of them have been almost filled up with the disintegrated volcanic ejecta, in which the cogon (Saccharum Koenigii, Rets.) is growing. They lie on a slope, the highest being at some 140 feet above the lake and the lowest at the water level.

In the southwest end of the island there rises the old crater Binintian Munti. It is completely extinct, and filled up with disintegrated materials of the falling borders or ridges of the ancient rim; there remain only two edges, situated in the northeast and southwest. The summit stands at 60 feet above the level of the lake, and its diameter or longest axis measures about 1,200 feet. On the denuded slopes of this cone Mr. Centeno distinguished nine different and very distinct layers of volcanic ejecta. Just northeast of Binintian Munti rise

THE GREEN AND YELLOW CRATER LAKES OF TAAL VOLCANO.

Tabaro, a well-shaped cone, and Tabaro-Munti, of similar form. Along the eastern shore there rises the Pinagulbuan, a fine crater formed on the shore line; only the western part on the shore remains, for the eastern, if it was formed by the ejecta fallen into the water, has been washed away.

The central or main crater is nearly round, its diameter on a north-south line being 1,900 meters (6,233 feet) and the east-west diameter 2,300 meters (7,546 feet). The edge of this crater is somewhat irregular, but is nowhere broken through, its highest point standing at only 320 meters (1,050 feet) above sea level and its lowest at 130 meters (426 feet). It is said that Coshima, in Japan, is the only other volcano of similarly low altitude. Within the rim are two hot pools, known, respectively, as the yellow and the green lake, and a little active cone about 50 feet in height, from which escape steam and sulphurous gas in varying quantities. The level of the interior pools, according to Centeno, is approximately that of Lake Bombón itself.

In the smaller lake, every few minutes, the water in the center is blown up like an immense bubble, which, rising above the surface, finally bursts, revealing a black orifice and causing the boiling and very turbulent water to assume all imaginable colors. The quantity of aqueous and sulphurous vapor escaping from the lakes, from the active cone, and from the opened crevices on all sides, is sufficient to form a broad, smoke-like column of vapor, which is visible especially during the night and in the early morning. At some distance, and before reaching the edge of the crater, where a view of the bottom can be obtained, the rumbling sound produced by the escaping vapor, under the influence of the mysterious subterranean forces, can be heard, like that of an immense boiling kettle.

The changes which this volcano has undergone and the disasters which it has caused since historic times are very remarkable. According to the chronicles of the time of the Conquest, the crater was then on the northwestern point of the island, having a cone which exists to-day, and is called Binintian Malaqui. A few years after the Conquest that crater ceased acting and another appeared on the eastern side of the island, which in 1716 was submerged, leaving above the surface the two islands Nabuin and Napayon. Then a new crater appeared on the eastern side of Pulo Volcán, which was gradually enlarged toward the west until the present crater was formed, which has not changed much since 1754. Among the various eruptions since the Conquest, the most notable are that of 1749, when the village of Sala disappeared, and that of 1754—the greatest of all—when the villages of Taal, Lipá, and Tanauan, which were then on the shores of Lake Bombón, all disappeared. All the eruptions have consisted of showers of burning ashes and scoriae, between which showers, great blocks of basalt were thrown out, covering the whole region to a depth varying from a few centimeters to two or three meters and

causing the different strata of volcanic material which can be seen throughout the province.

The earliest known published reference is by Father Gaspar de San Agustin, written in 1680. This account is given in full by Centeno for the light it throws on the condition of the volcanoes prior to the more recent eruptions, and I have examined the original work. Father Gaspar says: "In this Lake of Bombón there is a small island upon which is a fiery volcano, wont at times to eject numerous and very large burning stones, which destroy and lay waste many cultivated fields which the natives of Taal possess on the slopes of the said volcano." Father Alburquerque, priest of the town of Taal, which lay on the shore of Bombón, but is now destroyed, examined the volcano. He had himself let down into the crater which had two openings, one of sulphur and one of green water which is always boiling. To this place now come many deer, which are attracted by the saline deposits (*salitrales*) existing about the lake of the volcano. The opening which lies toward the town of Lipá (east-southeast) is a quarter of a league in width.

Father Alburquerque was prior of Taal during the period 1572–1575, so that the first historic eruption can be placed a little earlier than the former date. Father Rada mentions it as having occurred in the year 1572.

Again about the year 1591, the volcano began to smoke, when Father Bartolomé de Alcántara was priest of Taal. After this outburst it remained quiet; but during the period 1605–1611, when Father Abreu was priest at Taal, frequent rumblings were heard. Mr. Semper thus summarizes the early history prior to the year 1749, the date of a more serious eruption:

> Two doubtful eruptions are mentioned in the years 1634 and 1645, without statement of the name of the craters. From 1707 to 1733 the two Binintians alternated with one another till at length, in 1749, the middle crater burst out, silencing the other two.

Of the eruption which occurred on the 24th of September, 1716, Father Francisco Pingarron, rector of Taal, wrote a detailed report. In 1731 a new eruption took place, which was described by Father Buencuchillo, priest of Taal. Doctor Becker summarizes both reports as follows:

> September, 1716, after sounds mistaken for discharges of artillery had been heard, fire was described bursting from the volcano on the island at the side toward Lipá, on a point called Calavite. This point is now called Caláuit and is in the southeastern corner of the island. The fire then shifted into the lake in the direction of Mt. Macolod, throwing up water and ashes in immense bubbling masses, rising like towers into the air. The water grew hot and black, fishes were strewn on the beaches as if they had been cooked, and the air was so full of sulphurous smells and the odor of dead fish that the inhabitants sickened. This state of things lasted three days. In 1731, so Father Buencuchillo writes, "fire broke out in the lake in front of

SKETCH OF THE TAAL VOLCANO.

the point which looks to the east, obelisks of earth and sand so large and high raising themselves from the water that in a few days an islet was formed with a quarter of a league of coast line."

Centeno thinks the Father referred to the northeastern point of the island, and that the islets which now exist there were formed at this eruption. Possibly, however, an island of ejecta may have been formed at Caláuit and have been washed away at a later date. It would be interesting to examine the existing islets with a view to estimating their age.

After eighteen years of relative calm, a great eruption occurred in August, 1749. From the long report of Father Buencuchillo we take only the following:

On the evening of the 11th of August a glare was seen on the summit of the volcano, and at 3 o'clock of the following morning strong detonations began to be heard, and immediately a column of black smoke issued forth, not only from the main crater, but also from many other small craters opening in the island. From the very bottom of the lake there also arose awful pyramids of water, sand, and smoke, towering to the clouds. These immerged craters opened to the north and east of the island, or toward the towns of Sala and Lipá. About 9 o'clock in the morning violent shocks were felt, coinciding with the opening of new immerged craters close to the northern and eastern shores. Near Sala a great extension of the coast of the lake sank down into the lake, only the heads of the tallest trees emerging above the surface. The land as far as the town of Calamba and the bank of Laguna de Bay was divided with tremendous noise. The land all around was considerably shaken, so that Tanauan as well as Sala were almost destroyed; the rivers changed their courses, streams broke out from new springs, and the ground in several places sank. While this was taking place I saw several coco and bonga trees, which trees, as everyone knows, are very high, yet I could touch the branches with my hands without any difficulty; and I also saw several houses which before, on account of their height above the ground, it was necessary to make use of a ladder to enter, but that after the sinking of the ground it was necessary to go down to enter them. But what struck me most of all was that the Indians kept in their houses, quite happy, although they saw that they were being buried alive.

This eruption lasted for three weeks and darkness was produced by the dust and ashes suspended in the air, so that for some days it was necessary to light candles at noon. After three weeks the eruption terminated, as well as the frequent shocks of earthquake which accompanied it, but a thick column of smoke and vapors continued to rise quietly for some years.

The greatest eruption of Taal took place in 1754. It consisted of only fragmental ejecta, but these were sufficient to destroy four villages lying about the lake. "This ash," Semper says, "has now indurated and a new growth of bamboo and palms has sprung up around the projecting ruins." Father Buencuchillo wrote also a pathetic description of this eruption, from which we take the following:

It began on May 13 and did not end till the 1st of December. During this time the intensity and aspect of the eruption were continually changing. It was two hundred days of devastation and ruin for the inhabitants, to whom the time must have appeared an eternity. During this terrible time the four principal towns of the laguna of Bombón disappeared, viz, Sala, Lipá, Tanauan, and Taal, with the numerous villages around them.

PRINCIPAL CRATER LAKE OF TAAL VOLCANO.

Other towns of the same province at a great distance, as well as towns of the neighboring provinces of Balayán, Batangas, and Bauan, also suffered great damage. Rosario, Santo Tomás, and San Pablo also felt the effect of the rain of ashes and scoriae, as also did almost all the provinces below the center of Luzón. The quantity of ashes and scoriae which was sent up by the volcano was so great that a great quantity of pumice stone appeared on the surface of the water of the laguna; and several villages around Tanauan and others around Taal being near the volcano and because the wind was east were totally destroyed by this rain.

The eruption continued thus with greater or less intensity, but continuous, till the 10th of July, when the nature of the volcanic rains changed, as may be gathered from the following words:

There was not a single night throughout the whole of this month of June till July 10 in which flames were wanting on the volcano or in which there were not rumbling noises. This went on till July 10, when it rained mud over the town of Taal, and the mud was of so black a character that ink would not have stained so blackly, and when the wind changed, the mud covered a village called Balele, which is near Sala, which village was the most fertile of the whole of that district.

The volcano continued to throw out, with more or less intensity, flames and black smoke during July and August and part of September, till on the 25th of this last month it appeared as if the volcano wished to parade all its forces against us, because, on that date, to the horrible rumblings and the tremendous flames was joined a tempest which originated in the cloud of smoke. The lightnings which accompanied the storm continued without interruption till December 4. It is truly marvelous that the cloud lasted for more than two months. Over and above this, there was from this same 25th of September till the morning of the 26th such a copious rain of pumice stones that we were obliged to abandon our homes for fear the stones would break through the roof, as indeed happened in some houses. We were thus compelled to flee through this rain of stone and several were wounded by the stones falling on their heads. During that one night the ground was covered with scoriae and ashes to the depth of a foot and a half, thus destroying and drying up the trees and plants as if a fire had passed over them.

The activity of the volcano continued, with short intervals of quiet, during the months of October and November. On the evening of the feast of All Saints the volcano again began to vomit forth fire, stones, sand, mud, and ashes in a greater quantity than ever. This went on till November 15, on which date, after vespers, there commenced a succession of rumblings, so loud as to deafen one, and the volcano began to vomit forth smoke so dense and black as to darken the atmosphere, and at the same time such a great quantity of large stones fell into the lake as to cause big waves. The earth trembled, the houses shook, and yet this was but the preparation for a fresh rain of scoriae and ashes, which lasted the whole of the afternoon and part of the night.

On the 27th of November another eruption occurred, which the chronicler describes thus:

Notwithstanding the disaster that had overtaken us, I still remained in the said town, together with the chief justice of the province, till, on the night of the 27th, the volcano began once again to vomit such a quantity of flames that it seemed as if all that had been erupted during the preceding months together did not equal that which was thrown forth during that hour.

Every moment the violence of the eruption increased, so that the whole of the island was covered with fire. This increasing volcanic activity, accompanied as it was by frightful subterranean rumblings and earthquakes, caused the unfortunate inhabitants to abandon their town and at any risk to gain the heights which rise between it and Santuario de Caysasay.

Thus passed the 28th, but on the morning of the 29th smoke was observed rising in various points of the island from Caláuit to the crater in a straight line just as if a fissure had been opened all along the line. Between 4 and 6 o'clock of the same evening (November 29) the horizon darkened leaving us in complete darkness, and at the same time it began to rain mud, ashes, and sand, and though not in such quantities as before, yet it kept on without interruption the whole of that night and the morning of the 30th.

The rain of mud ceased somewhat at 4 o'clock in the afternoon. It then measured a meter in depth in Santuario de Caysasay, which is distant about four leagues from the volcano. In some places nearer the island the depth of the mud, etc., reached more than three yards.

The rain of ashes completely ceased on the 1st of December, and then a hurricane, which lasted two days, came to put the finishing touch to so many disasters by tearing up the little that had been left standing.

No great eruption has occurred since 1754. In 1808, 1874, 1878, 1880, and recently, in 1903, there were outbreaks, but the damage done, if any, and the outbursts themselves, seem to have been confined to the island itself and to the main crater.

"In spite of the terrible lessons of the last century," comments Centeno, "all of these localities have been repopulated. Their fertility, their surpassingly beautiful topographical situation, and their healthfulness charm the people into a prompt forgetfulness of past disasters."

We have given a somewhat full account of the greatest eruptions which have occurred during the past three centuries, which must be kept in mind to see the probability of the following theories concerning the past history of this volcano. The Zúñiga theory supposes that Lake Bombón, actually surrounding the craters, was originated by the collapse of a volcanic cone. It is probable that the primitive cone was blown out by successive explosions rather than by a collapse. We will not deal longer with this theory, discussed at length by Mr. Centeno. It will be enough to repeat what Doctor Becker has written concerning it:

Lake Bombón has a rudely oval form, with a mean diameter of about twelve miles. I have not been able to ascertain its level, but the surface can not stand many feet above the sea, for the Río Pansípit, which connects the lake with the Gulf of Balayán, is only about six miles long and has no cataracts, and it was formerly navigable. It cuts through a low mass of tuff. The other portions of the lake are encompassed by a crest considerably higher than the surrounding country. At some points this crest comes close to the shore of the lake, while at others a narrow strip of lowland intervenes, but, as Mr. von Drasche pointed out, the watershed is everywhere so near the shore that the lake has not a single affluent. The entire surrounding region is composed of volcanic materials, almost altogether tuff. Father Zúñiga regarded the lake as originating in the collapse of a volcanic cone, and to this theory von Hochstetter, von Drasche, and Centeno assent. The theory of volcanic collapse seems to imply that an empty space beneath the earth's surface is formed by the eruption of lava and that the intervening rock is too weak to bear the load put upon it, as the country over a mine sometimes subsides. I doubt this theory as applied to volcanic cones, excepting when invoked to account for local details of structure. It seems to

me very improbable that a considerable cavernous subterranean space is left when lava is extruded, nor can I think the foci of volcanic activity so close to the surface that such a cavern, if formed, could be filled by means of mere subsidence of the cone. If the focal distance from the surface is many miles, such a cavern would be filled in immediately by molded or fractured rock from its own sides, and even this would most likely only partially relieve the tendency to upheaval which so usually accompanies active volcanism. On the other hand it is well known that craters of vast size have been formed by explosions, and I can see no reason to doubt that Bombón may have been, probably has been, formed in this way in spite of its large dimensions.

From the southern edge of Bombón to the Gulf of Batangas, and, again, from the northern edge of the lake to the northern end of Manila bay, stretches a great area of tuff, to which reference has been made in discussing the distribution of volcanic rocks. The area to the north of the lake slopes with extreme gentleness toward the bay, decreasing in elevation only 500 to 600 meters in 30 kilometers on a wonderfully steady slope. All observers seem to be forced to the conclusion that most, at least, of this tuff comes from Taal. Under subaerial conditions, I should say that this would be impossible. Such masses could not be projected to distances so great or distributed in such a manner along so flat a country. Nothing is more certain, however, than that Luzón stood at a considerably lower level than it now does in recent times. Taal and Bombón must have been immersed, and a channel then passed from Batangas gulf to the eastward of Zambales range into the Gulf of Lingayén. In such circumstances the actual distribution of tuff from the Taal vent would be intelligible.

The conditions, then, seem to point to the hypothesis that at the locality of Lake Bombón there existed a volcano, at least the lower portion of which was below water level. By ordinary eruptions and Krakatoan cataclysms vast quantities of scoriaceous ejecta were expelled, and such of these as fell into the Batangas-Lingayén channel, or its drainage area, were distributed as the more or less stratified tuffs now so widely spread along this course. Finally, Taal itself is the small inner cone of a great crater of explosion. This hypothesis appears to account for all the facts at present known to me, such as the rim about the lake, the contour of its bed, the steady slope of the northern tuff plain, the distribution and character of the tuff. I am by no means of the opinion, however, that all the tuff of Manila province came from Bombón.

Mr. H. D. McCaskey, B. S., has also recently written on the same point:

My own notes and observations in these provinces tend to the belief that Taal was unquestionably, at a prehistoric period, very high and of tremendous activity; that it stood partly surrounded, if not wholly, by a stretch of the sea extending from the Gulf of Batangas to the Lingayén gulf; that during its activity large quantities of volcanic ejecta fell into this inland sea, forming the more or less stratified deposits of tuff now furnishing much of the rich soils of the provinces of Batangas, La Laguna, Cavite, Rizal, and Bulacán; that an explosion, or a series of them, blew out the entire upper cone, leaving the rim of the present boundaries of the lake of Taal; and that subsequently minor cones were formed and this region was gradually raised to its present level.

A number of points of similarity between the volcano of Taal and that constituting Barren Island, in the Indian ocean, present themselves, and it does not seem at all unlikely that these two exceptionally low volcanoes, that are now but most unsightly remnants of their former cones, may have passed through similar mighty cataclysms to result in their present similar forms.

Prof. J. W. Judd, F. R. S.,[1] believes also that the actual cones forming the Krakatoa group represent small cones which have grown inside the great crater originated by the blowing out of a previous great volcano.

At the southern limits of this tuff area there are many sulphurous springs.

A summary of the historic eruptions of Taal may be seen in the following table:

TABLE 9.—*Eruptions of the volcano of Taal.*

YEAR.	Month.	Day.	Hour.	Remarks.
1572....	.....	.....	.....	Vaguely reported by Fathers Rada and Zúñiga.
1709....	.....	.....	.....	Eruption without loss of life or property.
1716....	September..	24*	6.00 p. m.....	Violent eruption accompanied by strong earthquakes which shook the neighboring regions.
1749....	August	12	9.00 a. m.....	Two violent eruptions, the first on the evening of the 11th, the second at 9 a. m. on the 12th, the latter accompanied by a violent earthquake. Numerous witnesses report that many explosions took place in a line running from Taal to the Maquíling cone on the banks of Laguna de Bay.
1754....	May	15	9.00 p. m.....	The greatest eruption reported of this volcano; it continued with intervals till December 1. Four villages lying around the lake were completely destroyed.
1874....	May	17	.....	Eruption of black smoke and ashes.
1874....	July	19	.....	Eruption of gases which were so sulphurous that the characteristic odor was perceptible as far as the town of Talisay. A large herd of cattle died on the island of Volcán, on whose western shore the abundant vegetation was almost completely burned.
1878....	November..	13	.....	From the end of October until the 12th of November subterranean noises were heard frequently in the direction of the volcano. On the day mentioned the eruption began and lasted until the 15th, covering the whole island of Volcán with a light layer of volcanic ashes.
1880....	June.....	8	.....	From the 8th of June the volcano was observed to be more active than usual, and sometimes at night the crater was covered with a glare. On the 17th, 18th, 19th, 20th, and 21st of July subterranean noises were heard, and many witnesses at Talisay, some six miles distant, report that from time to time a small ball of fire (apparently about 2½ feet in diameter) appeared above the crater. This ball, after reaching a considerable height, burst into small fragments, some of which fell back into the crater and the remainder upon the exterior slopes.
1903....	April	.....	.....	The eruptions occurred at intervals, an immense column of vapor, stones, and ashes shooting up at each explosion, which, on account of the calm state of the atmosphere, returned to the earth almost in the same spot around the crater.

THE VOLCANO OF MAQUÍLING.

Just a few miles to the northeast of the volcano of Taal rises the Maquíling, a rough basaltic or doleritic cone some 3,800 feet high. It presents many ridges and cliffs on the summit and sides. The crater is open to the southwest and east-southeast, and the rest of the standing rim rises to a height of 1,600 feet above the ancient bottom. The northern slopes leading into the Laguna de Bay are so steep that the whole of the mountain seems to be inclined to the lake, as its name Maquíling signifies. Around the main cone there rise some subordinate hills—all of them secondary craters related to the principal one by

[1] The Eruption of the Krakatoa and Subsequent Phenomena.

MOUNT MAQUÍLING LOOKING SOUTH.

low lava and tuff ridges. There is a more remarkable one on the shore of the lake called the pool of the Caimanes. A layer of rather soft tuff covers the lower part of the mountain slopes. This tuff is very similar to that employed in the buildings in Manila, which is obtained from the left bank of the river Pásig, and outcrops at Guadalupe.

Present volcanic activity of Maquíling.—Among the most remarkable evidences of activity are the mud pools called Natugnos, situated on the eastern side of the volcano at a height of some 900 feet. Mr. Abella describes these volcanic pools as follows:

There is a small lake about 20 meters in diameter around which an odor of sulphur is noticeable. The lake is composed of boiling mud of a dark grayish color. When the bubbles of mud burst, a peculiar sound is produced and particles of the semiliquid mud are splashed on the borders of the lake. The temperature of these splashes of mud is 84° C.

The ebullition must have had periods of increase, because there is a broad track of matter very similar to the lava or currents seen in active volcanoes, from the border of the lake as far as the river Molauin. It would seem as if the lake had overflowed and the mud had run down the incline.

Close to the principal lake there are others much smaller, some being merely little pits and others simply smoke vents, but all are filled with mud; and vapor comes from them with great force, while the boiling mud presents different colors—red, yellow, gray, and sometimes completely white.

There are, not far from the pool just described, some places where the solfataric action has almost ceased. The mud has dried up and the white clay which remains is used now by the natives as paint. In one of them the sulphurous vapors are still issuing forth; wherever the ground was touched it showed a high temperature, and near the smoke vents it reached as high as 100° C. The ground also presented the variegated colors of sulphur, of which white, red, and yellow predominated. There are also found fine sulphur concretions.

Besides this, there are fumaroles all around the volcano at different heights from its base; in almost all of them there is some production of the white clay or kaolin going on, owing to the alteration of the doleritic rocks by the sulphurous vapors.

As another sign of the remaining activity of this volcano we must mention the numerous thermal springs which exist on the slopes of Maquíling; which springs, we can and ought to consider as a result of the existence in the interior of fumaroles, which, instead of coming to the surface, employ their activity in raising the temperature and dissolving substances in the waters of the subterranean currents which they come across. They are, we might say, the last traces left after the extinction of the volcanic foci.

The most important and at the same time the best known springs for their medicinal properties are those which rise in the town of Los Baños. These springs were known by the natives from the time of the Conquest. They were then known by the name of Maínit, that is to say, "hot."

The existence of Mt. Maquíling, of Pansol, and especially of the Caimanes Lake, together with the lava rock of which they are formed, also indicate that after the commencement of the activity of the principal focus of Maquíling, and perhaps even after its partial or total extinction, other foci of activity broke out. The activity of

these latter was of less intensity as being subordinate to the principal focus. The last of these was undoubtedly the annular or crater-like hill in the Caimanes Lake. This hill, which is one of the typical ones formed of lava, still preserves the rapilli and peperines which are characteristic of recent activity. Probably there was also a gradual rising of the land in the interval between the two eruptions, and at the same time the volcano itself was raised; for it seems very natural that the band of tuff which surrounds it is not of subaerial formation, but that it was deposited in water not very deep and perhaps disturbed and agitated, for there are large and small pieces without any apparent order, but all of them perfectly superposed and sedimentary. The peperines and conglomerates of the mountain are all composed in this way, and exist not only at the foot of Maquíling, but also all along the south shore of Laguna de Bay, and the left bank of the Pásig, till close to Manila.

THE VOLCANO OF BANÁJAO.

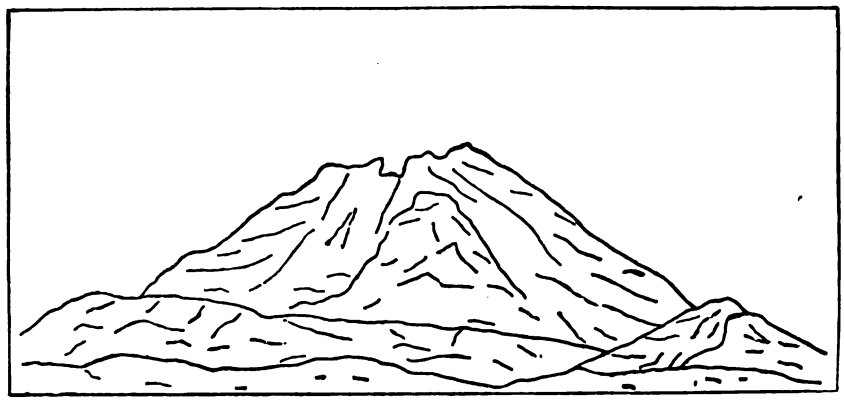
Not far from Maquíling, to the southeast, rises the magnificent cone of Banájao 7,382 feet in height. Its crater, now 700 feet deep, was occupied by a lake till 1730 when, according to Father Huerta, in his Estado Geográfico, a violent eruption occurred bursting the southern side of the crater and pouring out water, incandescent lava, and big rocks which can be seen near Sariaya town. The crater now, as seen from the south, seems an elliptical deep hole looking to the south. Since 1730 it has been dormant. There are other subordinate cones about it, two of them, Mt. San Cristóbal to the northwest and Masalacot to the southwest, being very well shaped. There are also near Dolores at the foot of Mt. San Cristóbal and elsewhere some deep circular ponds which are probably extinct craters, to which the natives of the country attribute a rather mysterious origin. This volcanic country has not yet been examined. The volcanic formations of Banájao and Maquíling very probably extend to Talim Island and Jalajala peninsula. In this, besides the volcanic rocks and layers of tuff, there exists a hill known as the sulphur hill at the foot of which are thermic sulphurous springs.

Northward from Manila there is the striking conical Aráyat looming up over the extensive plain between Pampanga and Nueva Écija. The Zambales range bordering the western part of Luzón was spoken of when treating of the distribution of volcanic rocks.

SEISMIC CENTERS OF PANGASINÁN AND NUEVA VIZCAYA.

It is not easy to determine whether the seismic center disturbing the provinces of Pangasinán and Nueva Vizcaya forms but one center or system situated near the connecting point of the two ranges of

BANÁJAO VOLCANO, LOOKING NW.



BANÁJAO VOLCANO, LOOKING E.

mountains, namely, the central and the eastern one, called the South Caraballo. The volcanic vents and the many fissures found in the Benguet district show that there once existed at this place a very important volcanic center, the relics of whose activity are still to be found in the form of hot sulphurous springs. Thus the true center, radiating sometimes southwestward and at others northeastward, seems to be situated near this district, although the shocks were more frequently felt with force in the alluvial plains of Pangasinán and Nueva Vizcaya than in the highlands of Benguet.

To this region probably must be referred the eruption or displacements which occurred in 1641; but the report of this event is so confused that it is quite impossible to locate the place pointed out in it. Doctor Becker summarizes and comments on the report as follows:

The third eruption on the same January 4, took place from what was called "a water volcano" by the archbishop's agent. The description makes it clear that by this term he had no intention of indicating thermal phenomena, but merely an outburst of water accompanying what he himself called a frightful earthquake. It took place in Luzón among the Igorots, "who, relatively to the Ilocos, live five days' journey eastward and inland." Three hills and several villages are said to have been thrown into the air in fragments and utterly annihilated. This locality has been regarded as Mt. Santo Tomás or Tonglón, some 15 miles from Aríñgay, in La Unión province. This identification does not appear accordant with the original description, and how it was reached I have not succeeded in ascertaining.

In the seismic center of Pangasinán and Benguet there was a violent disturbance in March, 1892. All the stone buildings in the north of Pangasinán and south of La Unión and Benguet provinces were greatly damaged by the earthquakes which were repeated with more or less force during nearly three months; wide fissures were produced everywhere, especially through the low alluvial plains, and big crevasses were opened and landslides occurred on the southern mountains of Benguet. Mr. Abella says:

The epicenter of these earthquakes must be placed between the towns where the force of the earthquakes was more intense, and noticing their positions on a map, we may say that the epicenter appears to be very elongated or almost linear. In the south it follows the mean direction of the river which is known under the names of Bued, Abilulen, and Angalacan and in the north it spreads out in two directions, one passing to the north-northwest by Santo Tomás and Agoó, the other to the north-northeast by Baguió in the district of Benguet.

This north bifurcation must be more apparent than real and is owing both to the few points of observation in which the effects of the earthquakes could be studied, and to the fact that when the great mass of Mt. Tonglón was violently agitated, the direct transmission of the force thus produced to the alluvial land of Santo Tomás and Agoó, necessarily caused in these towns the greatest effects. It does not follow, however, from this that the direct action of the earthquakes takes place precisely under these towns.

Moreover the configuration of the ground along the inaccessible defile of the Bued; the great number of thermal springs which are at the bottom of the canyon; the recent volcanic rocks in Álava, Baguió, and La Trinidad in the same direction as

the defile; all this, together with the relations which exist between the situations of the places of maximum seismic effect, make one suspect that they were produced by volcanic action.

The center of Nueva Vizcaya seems to be more active than that of Benguet and Pangasinán. The central and northern part of the Benguet district seems really more stable than its southern part and the neighboring provinces of Pangasinán and Nueva Vizcaya. The most violent seismic disturbance on record, which occurred in this last province, was that of 1881. It was described as follows by Mr. Abella:

Ever since the month of July of the preceding year 1880, in which the great earthquakes of the island of Luzón happened, the province of Nueva Vizcaya has not been without shocks from time to time, but some of these were so slight that the majority of the inhabitants did not notice them. In the month of July of this year, however, these movements began to become more sensible. On the 27th of that month, at 5 p. m., a strong shock was felt, damaging several of the few masonry buildings. This was the forerunner of the seismical activity now to be described. From that time began a decided and seldom interrupted series of slight and strong shocks, the maximum intervals between which did not exceed three days. Without any interruption of the series of shocks, on September 1, at 12.20 p. m., a sudden, strong, quiet trembling motion was felt, similar to all the shocks which have agitated and still continue to agitate the district. From that moment a considerable increase of seismical activity was developed, on such a scale that the shocks were felt at intervals of an hour or a minute, and sometimes continuously with palpitation of the ground, only interrupted by the interpolation of more serious shocks. This of course could not fail to produce upon the terrified inhabitants of that splendid province a painful and nervous tension.

During the month of September thirteen very strong earthquakes were felt, besides numerous slight shocks. We must observe here that only the most important shocks were recorded, the remainder, although quite sensible, being too numerous to mention.

I have been able to establish the probable centrum of the agitated region, my observations on which I will now summarize.

The thunder, which always precedes the shock by a few seconds, is heard most distinctly toward the middle of the province in the neighborhood of Bambang. The most important circumstance is that the interval between the sound and the movement is always shorter the nearer the observer is to that town, and especially when on the surrounding heights clear of the deadening effects of the valley's alluvium. The sound of the shock and the movement, although sensibly successive in these places, become very often mingled together. On the other hand, toward the frontiers of the province there are observed: First, a sound of subterranean thunder; second, an interval of rest and quiet sometimes of five or six seconds; and third, a vertical shock accompanied by a noise which we may call the "squall" of the seismical waves, followed without interruption by a horizontal movement of oscillation. When we observe the cracks produced in the masonry buildings of Bambang we also come to an analogous but more certain conclusion.

It is also very important to remember that while cracks produced in the buildings of villages at a distance from Bambang show more or less visibly an inclination to the horizon, in this town they are perfectly horizontal; so that, for instance, two complete cracks in its church tower divide the tower into three complete distinct blocks, which have not yet fallen, partly, doubtless, on account of the excellent material, but principally from the circumstance that the shocks sustained by the tower were purely vertical movements; while it is most probable that if a horizontal shock had occurred the upper portions of the tower would have fallen.

This town has also suffered much other damage in its masonry buildings. All these peculiarities lead us to conclude with sufficient certainty that the seismical vertex of movement which agitates the district lies at or about Bambang; that is to say, the active center of subterranean vibrations must be a point in a vertical line below the vicinity of Bambang. Which is that point, or at what depth is this active center of seismical disturbance situated?

It is believed that it is not far from the surface, and I adduce for your excellency's consideration two principal reasons for maintaining this deduction; namely, the almost simultaneous occurrence of sound and movement at Bambang, and the comparative intensity and localization of the shocks.

In this report Mr. Abella is inclined to give a volcanic origin to the earthquakes of Nueva Vizcaya. He did the same some years later to those of Pangasinán, considering them as due to the remaining but probably dying activity that brought to light the rather volcanic rocks found in Benguet, and also pointed out that there was probably some possible subterranean communication between the active Mayón volcanic group and the volcanic vents of these regions. It may be so, but considering the structure both of south Benguet and the valley of Nueva Vizcaya one is led rather to consider these shocks as rockfall or tectonic. Certainly the region lying between Benguet and Pangasinán, through which the Bued river runs, can not be a very stable one, being, as Mr. Abella reports, formed principally of coralline, abrupt, and fissured banks lying on clay, alluvium, and sandstone formations. On the other hand, the thermic manifestations and increase of temperature in some springs occurred when the earthquakes of 1892 were very doubtful. Mr. Centeno visited Nueva Vizcaya some three years after Mr. Abella, and threw much light on the origin of the earthquakes felt there in 1881. In his report on the salt springs, which appeared on Monte Blanco in 1884 or at the end of 1883, he insists upon the necessary instability of the region west of Bambang.

To the west of the town of Bambang there appeared during last March some large thermal springs. They are at a height of 490 meters above the level of the sea, and 170 above the town of Bambang. The force of the water is such that a large quantity of clay and stones has been thrown up from the underground passages, and the water and clay thus sent out forms a stream which when it joins the river Abáot, discolors the water considerably.

When we visited them, on the 3d of May, the springs consisted of 10 or 12 holes, all of them within the compass of 900 square meters. Within this space there were also signs of other springs which had been destroyed by the blocking up of the channel, probably by the falling in of the sides. Of the 10 or 12 springs which were still in activity only two were of any importance for the amount of water sent out, for in the rest the amount of water was so small that they would be considered simply as vapor vents.

The temperature of the water differed considerably in the different springs, although they were all quite close to one another. In some the temperature was 30° C.; in others, which were only distant some 20 meters, it rose to 60° C., which was the greatest.

The taste of the water was distinctly salty, and in some springs it had a bitter taste, something like that of bicarbonate of soda.

After visiting these springs we went on to see Las Salinas of Monte Blanco, which are about 4 kilometers to the southeast of the springs and 250 meters above the level of the sea. These "salt pits" consist of several small springs with water at the ordinary temperature, which appears on the surface of a mass of white chalk, on which common salt and carbonate of lime were being deposited. Many stalactites were always being formed by the carbonate of lime.

The diminution or almost total extinction of the springs on Monte Blanco is very recent, because von Drasche, in his expedition of 1876, found them in full activity, and I myself have noticed that the sediment in many places where the water does not now flow is of very recent formation. The existence of several salt pits in different points of the Cordillera Central leads me to suppose that there are large deposits of salt, which are traversed by subterranean currents of water, more or less hot, and thus give rise to the salt springs or pits.

We believe neither direct nor indirect volcanic action was the cause of the earthquakes of Nueva Vizcaya in 1881; rather we found a certain relation between the existence of the salt springs and the phenomena not only in Bambang, but also in several other points of the Cordillera Central; for these springs, which appeared at such a great height above the level of the sea and with water so charged with salt, would seem to indicate that under the ground of that district there are currents of water, passing over salt deposits, which consequently grow less and less thus leaving large caverns under the ground.

These caverns are continually on the increase, owing to the dissolving action of the water, till the moment when they give way and sink, causing at the same time shocks or earthquakes. These shocks are transmitted to the surface with more or less intensity and duration according to the nearness and size of the cavern which has fallen in. This class of earthquakes, which I have named purely mechanical ones, always presents some special characteristics: for example, they are almost always preceded by subterranean noises; the largest component is the vertical one, and the zone affected is very small. If any support is required to establish my theory I would call attention to several analogous earthquakes which took place in Europe and were carefully studied.

There are no records of destructive earthquakes felt in those regions in the past centuries. The most violent experienced there, excepting those mentioned above of 1881 in Nueva Vizcaya and 1892 in Pangasinán and Benguet, had their epicenter to the south of Luzón, because they were stronger in Manila and the neighboring provinces. Besides the havoc of 1641 mentioned in the beginning there is another story concerning the Benguet district. It is found in an old chronicle of the order of the Augustinians. According to this story, at the beginning of the eighteenth century quite a large number of cottages, situated to the east of Aríñgay and occupied by the natives, disappeared in a great earthquake which produced the submersion of an extensive tract of land.

Mr. Centeno says, commenting on the story:

Doubtless the topography of the beautiful plain in which La Trinidad is situated might give some reason for conjectures on the subject. A level circular plain about 4 kilometers in diameter is surrounded on all sides by hills whose height does not exceed 130 meters. In the interior of this plain is a lake, whose only outlet is through a fissure toward the northeast, and this outlet, perhaps, gives rise to the river which empties at Báuang (Unión). Looking down on this circular depression from the last heights (1,550 meters altitude) which are passed in reaching La Trinidad, the valley presents all the appearance of an old crater and it was our first impression that it was one.

There is no doubt that such a circular plain is an ancient atoll.

The few known violent earthquakes felt in these regions are the following:

TABLE 10.—*Earthquakes of the Pangasinán and Nueva Vizcaya centers.*

YEAR.	Month.	Day.	Hour.	Remarks.
1627....	August	.....	.....	Chronicles report large landslides on the Caraballo peaks.
1645....	December ..	1	8.00 p. m.	This is the earthquake which laid Manila in ruins; it was also destructive in the northern provinces.
1728....	November ..	28	.....	Was destructive in the fourth district.
1880....	July	18	12.00 noon.	At Benguet it was accompanied with great subterranean noise.
1881....	January	3	8.30 a. m.	On this date there commenced in Nueva Vizcaya one of the longest and most dreadful seismic periods on record; during the months of January, May, July, August, and September the shocks were almost continuous. The seismic center was probably near Dúpax. The strongest seismic waves extended over all the provinces of Luzón.
1892....	March	16	9.01 p. m.	Spread ruin throughout almost the whole province of Pangasinán, not a single stone building escaping without serious damage.

SEISMIC CENTERS OF THE NORTH OF LUZÓN.

In this northern region there probably exist two seismic centers, one to the east and the other to the west of the central range of mountains. In fact, many earthquakes felt with great force in North and South Ilocos and Abra are almost imperceptible in the eastern provinces of Cagayán and Isabela. On the other hand, many others have been known to be very powerful in the latter provinces throughout the Cagayán valley and very feeble in the former. This tends to show that the two centers are almost independent. Nevertheless, they probably belong to one general seismic system, like the one in Nueva Vizcaya and Pangasinán. Neither in the eastern nor in the western region are there well-known and important volcanic centers.

Not far from the northwestern point of Luzón or Cape Bojeador there exists a lake which the natives attribute to a submersion of land and of a town during an earthquake. In the central and western regions of Luzón there are also to be found many hydrosulphuric and sulphurous springs, as well as some salt ones similar to those of Nueva Vizcaya. Mr. Centeno describes some of Lepanto-Bontoc and Abra districts:

We have slightly touched on the existence of thermal sulphurous waters on the ranches of Magañgan and Buguiás when speaking of the volcanoes. There are a great number of pools of water which smell strongly of sulphureted hydrogen between the hamlet of Magañgan and Acnal. The temperature of the water varies from 16° C. to 50° C. From one of the pools a large quantity of black mud, having the same smell as the water, is being constantly given forth. We do not know the composition of the mud. About these pools there are numerous sulphur deposits.

In the eastern provinces not far from Cape Engaño there is a volcanic cone known as Caua or Cagua (18° 13′ north latitude and longitude 122° 04′ east of Greenwich), which is now at the solfataric stage, and which was seen smoking in the year 1860; it is commonly known among the natives as a "fire mountain." It was discovered by Mr. Claudio Montero, of the Spanish Hydrographic Commission. In 1860 Mr. Semper, from Aparri, saw smoke ascending from this mountain, and his servant, who went to its base, assured him that it was well known among the natives as a "fire mountain."

There are two active volcanoes, one on the island of Babuyán Claro (19° 40′ north latitude and longitude 121° 56′ east of Greenwich) and the other in the Dedica Reefs (19° 02′ north latitude and longitude 122° 09′ east of Greenwich). It appeared in September or October, 1856, between two rocks well known to the natives, at first as a column of smoke. No earthquake attended its first appearance, but in 1857 it underwent a violent eruption, attended by earthquakes. From that time to 1860 the volcano was constantly active, and in four years it reached a height of 700 feet. They are known as "smoking mountains." The well-known volcano of Camiguín (18° 55′ north latitude and longitude 121° 52′ east of Greenwich) is now in the solfataric stage. Mr. Cavada reports that in 1857 there was open on its southwestern side at the sea level a hole or vent from which hot water issued and sometimes solid ejecta, which formed a small island in front of it. In the "Derrotero" we read that near the point Escarpada, west of the volcano, there is a salt boiling spring close to the sea level.

The earthquakes recorded in the Batanes Islands during the last few years show that these islands form a seismic region with the northeast of Luzón rather than with the northwest. In the following list we mention the stronger earthquakes felt in northern Luzón:

TABLE 11.—*Earthquakes in northern Luzón.*

YEAR.	Month.	Day.	Hour.	Remarks.
1627....	August	.....	.....	Chroniclers exaggerate the extensive landslides which occurred on the Caraballo peaks. The shocks were very violently felt in all the northern provinces.
1645....	December ..	1	8.00 p. m.	This earthquake was very destructive in Manila. It was felt with great force in the north; at Lal-ló large fissures were opened in the earth and many large landslides occurred on the hills.
1728....	November..	28	.....	Very destructive in the whole fourth district.
1862....	September..	9	3.00 a. m.	Destructive chiefly in Ilocos Norte.
1866....	December ..	29	3.00 a. m.	Destructive chiefly in Ilocos Norte.
1870....	May	23	11.55 p. m.	Destructive chiefly in Ilocos Norte.
1874....	August	3	.....	It was destructive only in the Lepanto-Bontoc district.
1879....	October	14	9.00 p. m.	These two earthquakes were felt more violently in the
1879....	December ..	19	.....	northern than in the northeastern provinces.
1896....	September..	13	1.02 p. m.	This earthquake was destructive only at the northwestern edge of Luzón.
1897....	August	15	8.22 p. m.	Destructive chiefly in Abra and Ilocos Sur.

SEISMIC CENTERS ESPECIALLY AFFECTING MANILA.

Position of Manila.—Manila is most advantageously situated for experiencing almost all the shocks radiating from the different centers of Luzón; it is no more than thirty-five miles north of the active volcano Taal and a little more from the extinct ones, Maquíling, Banájao, and Aráyat. It stands on alluvial soil, probably covering the great tuff area stretching from the Gulf of Batangas northward through Cavite, Rizál, and Bulacán provinces, and which has been considered as originally coming from the southern volcanoes. This deep layer of tuff appears as an outcrop east and northeast of Manila. The surface ground of the capital is low and soft and traversed in all directions by many creeks or streams called "esteros," and from east to west by the Pásig river, which flows into the bay after a sinuous course of some eighteen miles. This river flows from the Laguna de Bay and forms its outlet. The observatory is situated about a mile southeast of the Walled City.

Number of earthquakes.—The total number of perceptible earthquakes registered at the observatory by the standard seismograph during the eighteen years between 1880 and 1897, inclusive, is 221, as may be seen in the following table:

TABLE 12.—*Earthquakes in Manila, by months: 1880–1897.*

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
1880	.....	.....	.....	1	.....	.....	6	2	1	1	2	.....	13
1881	.....	1	.....	.....	2	.....	2	2	3	4	1	2	17
1882	1	.....	2	3	2	2	6	.....	5	2	3	.....	26
1883	.....	4	.....	1	1	1	3	2	.....	.....	.....	.....	12
1884	1	.....	1	1	1	.....	.....	.....	.....	3	1	2	10
1885	.....	.....	1	2	3	.....	1	1	.....	1	6	.....	15
1886	2	.....	.....	.....	1	3	1	1	1	.....	.....	.....	9
1887	.....	.....	2	1	.....	1	1	.....	.....	1	.....	1	7
1888	.....	2	.....	.....	1	.....	.....	2	.....	.....	.....	3	8
1889	.....	.....	.....	1	3	1	.....	.....	.....	.....	.....	1	6
1890	1	1	1	2	3	3	.....	1	.....	.....	.....	1	13
1891	.....	.....	1	1	2	1	.....	.....	3	2	.....	1	11
1892	.....	1	8	3	2	1	2	1	.....	1	2	2	23
1893	2	1	1	3	.....	.....	.....	.....	1	1	1	.....	10
1894	.....	.....	.....	3	.....	.....	.....	2	.....	.....	1	.....	6
1895	1	3	.....	1	3	.....	2	2	.....	3	1	.....	16
1896	3	.....	.....	.....	.....	1	.....	.....	1	.....	.....	.....	5
1897	2	.....	1	1	2	.....	.....	3	2	1	1	1	14
Total	13	13	18	24	26	14	24	19	17	20	19	14	221
Average	0.72	0.72	1.00	1.33	1.44	0.78	1.33	1.05	0.94	1.11	1.05	0.78	12.30

From the above table we see that the average annual number of earthquakes at Manila is twelve. In the first six years, with the exception of 1884, the number was equal to or greater than the average, while in the four following years it was constantly below the average. After the year 1890 the number varies, the minimum being in 1896.

The average monthly number of perceptible earthquakes at Manila is one. The number in each of the six months of the spring and summer, or hot dry and rainy season, with the single exception of

June, is greater, while that in each of the six autumn and winter months, or the end of the rainy and during the cool dry season, is ordinarily less. The maximum number occurs in May and the minimum in January and February, the former being just double that of the latter.

The following list contains the most violent earthquakes felt in Manila and the neighboring provinces since the sixteenth century:

TABLE 13.—*Notable earthquakes in the vicinity of Manila.*

YEAR.	Month.	Day.	Hour.	Remarks.
1599....	June.....	.....	.....	Took place after a long dry period.
1600....	January	2	12.00 a. m.	Its duration of seven minutes was very extraordinary; many buildings fell and many people were injured.
1610....	November..	30	.....	Very violent shocks appeared to proceed from east-southeast.
1645....	December..	1	8.00 p. m.	Almost the whole city was laid in ruins; destruction to property was immense and much loss of life resulted.
1646....	March.....	.....	.....	Long series of shocks lasting sixty days; many of these shocks were violent.
1658....	August	20	5.00 p. m.	Very violent, of short duration; destroyed the buildings which the earthquake of 1645 had left.
1665....	June	19	.....	Reports of this earthquake are very few; many buildings were ruined and 19 people killed.
1675....	January or February.	.....	.....	Destructive in the neighborhood of the Taal volcano and in the island of Mindoro, where many fissures were opened in the ground and many landslides occurred.
1683....	August	24	.....	Damaged some buildings.
1699....	.....	.....	.....	The exact date of this earthquake is unknown. It is reported by Mr. Perry, who quotes Mr. Le Gentil.
1716....	September..	24	.....	It accompanied an eruption of Taal.
1728....	November..	28	.....	Caused great loss of property in Manila.
1749....	August	12	9.00 a. m.	It accompanied an eruption of Taal.
1754....	May	.....	.....	Long period of violent shocks felt in the southern provinces of Luzón during an eruptive period of Taal.
1767....	November..	13	3.25 p. m.	Caused cracks in stone walls and the falling of tiles.
1771....	February...	1	.....	Threw down the church of Ermita.
1796....	.....	.....	.....	Many chroniclers report during this year a great number of violent shocks felt in Manila, but the exact date of these earthquakes is unknown.
1797....	February or March.	.....	.....	Caused but slight damage to buildings.
1824....	October	16	.....	Damaged many buildings in Manila and in the provinces of the south.
1852....	September..	16	6.45 p. m.	The center of this destructive earthquake appears to have been in the Taal volcano. Many fissures were opened in the earth around the volcano. Damages to buildings were very great in the provinces of Manila, Cavite, Bulacán, La Laguna, Tayabas, and in the island of Mindoro. The hill Ubamba near Súbic (Zambales) was reported to have been almost leveled to the ground.
1852....	December..	24	.....	Was destructive only in the vicinity of Taal.
1855....	March.....	22	.....	It accompanied an eruption of Mayón, in Albay.
1862....	March.....	4	5.30 p. m.	The damage it caused was very slight.
1862....	July.....	13 16	4.25 p. m. 7.30 p. m.	These two earthquakes were destructive only in the district of Principe and along the eastern coast of Luzón.
1863....	June	3	3.20 p. m.	Threw down the Manila cathedral and in the town and neighborhood destroyed 25 public and 570 private buildings. Many people were buried in the ruins of the cathedral. The destructive force was felt chiefly in the southern and eastern provinces.
1869....	October	1	11.35 a. m.	Exercised its most destructive force in the province of Batangas around the volcano of Taal. Violent only northward; strong in the island of Mindoro.
1872....	December..	29	11.48 a. m.	Its epicentric area ran from Taal volcano to Zambales.
1873....	November..	14	5.30 p. m.	Most violently felt from Taal volcano eastward and southward in the island of Mindoro and in the provinces of Tayabas and La Laguna.
1875....	May.....	19	11.30 a. m.	Destructive in the provinces of Tayabas and Ambos Camarines.
1877....	June	24	5.00 a. m.	Felt violently about the volcano of Taal.
1880....	July.....	18	0.40 p. m.	The last destructive earthquake felt in Manila; it laid in ruins the town and the neighboring provinces.
1889....	May.....	29	2.23 a. m.	Its destructive force was restricted to the vicinity of Taal volcano.

It is an undoubted fact that most of the more violent shocks experienced in Manila seem to radiate from about the Taal center, and the epicentric area of many of them appears to proceed now northeastward, now northward, from the volcano. These facts suggest that the volcanoes of Taal, Maquíling, and Banájao belong to a single volcanic system. The seismic waves coming from this center travel more easily northward along the western ranges of mountains, the Sierras of Mariveles and Zambales, the central hills of Mórong, and throughout the great tuff area stretching to Bulacán, and even southward to the island of Mindoro, than along the mountains of Ambos Camarines.

Among the shocks affecting Manila very frequently there can be distinguished two very different and distinct types, distinguishable by the difference of the area shaken and by the force and character of the movement. Those of the first type move an area much more extensive and prolonged in a north and south direction. The oscillations are slow, but of great amplitude, reaching, in the neighborhood of the volcano, a violent or destructive force. Since the year 1880 there have been many instances—for example, those of May 29, 1889, and December 15, 1901—of earthquakes quite violent or destructive southward in Batangas and the island of Mindoro. These were felt at Manila in the form of large, slow waves, inclined either to the southeast or to the southwest.

Earthquakes of the second type have an ellipsoidal area prolonged also in a nearly north and south direction; the movements, which seem to have the same direction everywhere, are rapid, with the vertical component predominating, though they rarely attain great force. They are felt strongly in the direction of the Zambales and the Mariveles, where a secondary center seems to exist. It frequently happens, as it did this year, that subterranean sounds are heard in that region. Apparently the two foci of the ellipsoid when shaken act like two simultaneously active centers. This proves that the volcano of Taal and the Zambales cordillera, supposing them to be of volcanic origin, form one identical system. Among many others which we might cite we shall mention as examples of the same type the earthquakes of September 16, 1852; January 26 and December 29, 1872; May 1 and June 24, 1877; April 27, 1878; and July 25, 1882. Of these, only the first was really destructive. Throughout the Taal region and the cordilleras of Zambales and Mariveles great upheavals and displacements took place, and in Manila many buildings were laid in ruins.

The seismic center most dangerous for Manila seems to be situated in the east or east-northeast rather than in the southern and southeastern volcanic region. The waves radiated from this center are the most irregular, both in direction and force.

Direction of the seismic waves at Manila.—Since the year 1880, 278 greater waves have been registered, distributed among 221 perceptible earthquakes. The directions of the waves correspond to the sixteen main directions of the compass and are summarized in the following table. The number of the oscillations registered is expressed after the corresponding direction.

FIRST QUADRANT.	Number.	SECOND QUADRANT.	Number.	THIRD QUADRANT.	Number.	FOURTH QUADRANT.	Number.
N-S	19	E-W	20	S-N	16	W-E	2
NNE-SSW	38	ESE-WNW	16	SSW-NNE	9	WNW-ESE	4
NE-SW	23	SE-NW	24	SW-NE	14	NW-SE	25
ENE-WSW	19	SSE-NNW	22	WSW-ENE	10	NNW-SSE	17
Total	99	Total	82	Total	49	Total	48

The above table shows that the smallest number of waves are those from the west and west-northwest. This seems to suggest that there is no seismic center westward under the sea, such as is very probably the case at the western edge of Mindanao. Besides no tidal wave has ever been mentioned in connection with the destructive earthquakes of Manila.

The direction in which the shocks are more frequently felt at Manila are southeast, northwest, and north-northeast, the maximum number corresponding to the last direction. All the most important seismic and volcanic centers of Luzón, Taal, Maquíling, Banájao, and the volcanoes of Mayón and Bulusan lie to the south and southeast.

The two latter volcanoes do not represent any danger for Manila; their seismic waves hardly retain any force after passing through the mountain ranges of Ambos Camarines.

The great number of southeastern waves seems to be partly due to the fact that those radiating from the southern centers reach Manila a little inclined to that direction.

The investigations of the causes to which we can attribute these deviations of the seismic waves would carry us too far from our present purpose, so we postpone the question to a more opportune occasion.

The great number of waves proceeding from the northwest might urge us to consider the centers of Pangasinán and the Ilocos provinces as independent of those of Nueva Vizcaya and Cagayán were it not for the fact that such a direction has sometimes been registered even in earthquakes which evidently had their epicentric area in the north.

In the first quadrant, whence the greatest number of registered waves came, we find not only the center of Nueva Vizcaya and the one in the northeast end of the island, but there also exist two closer ones in the east-northeast and east. These last can be called the Manila centers, for their shaken area comprises ordinarily the city of Manila, the provinces of Rizal and Bulacán, and the former district of Infanta.

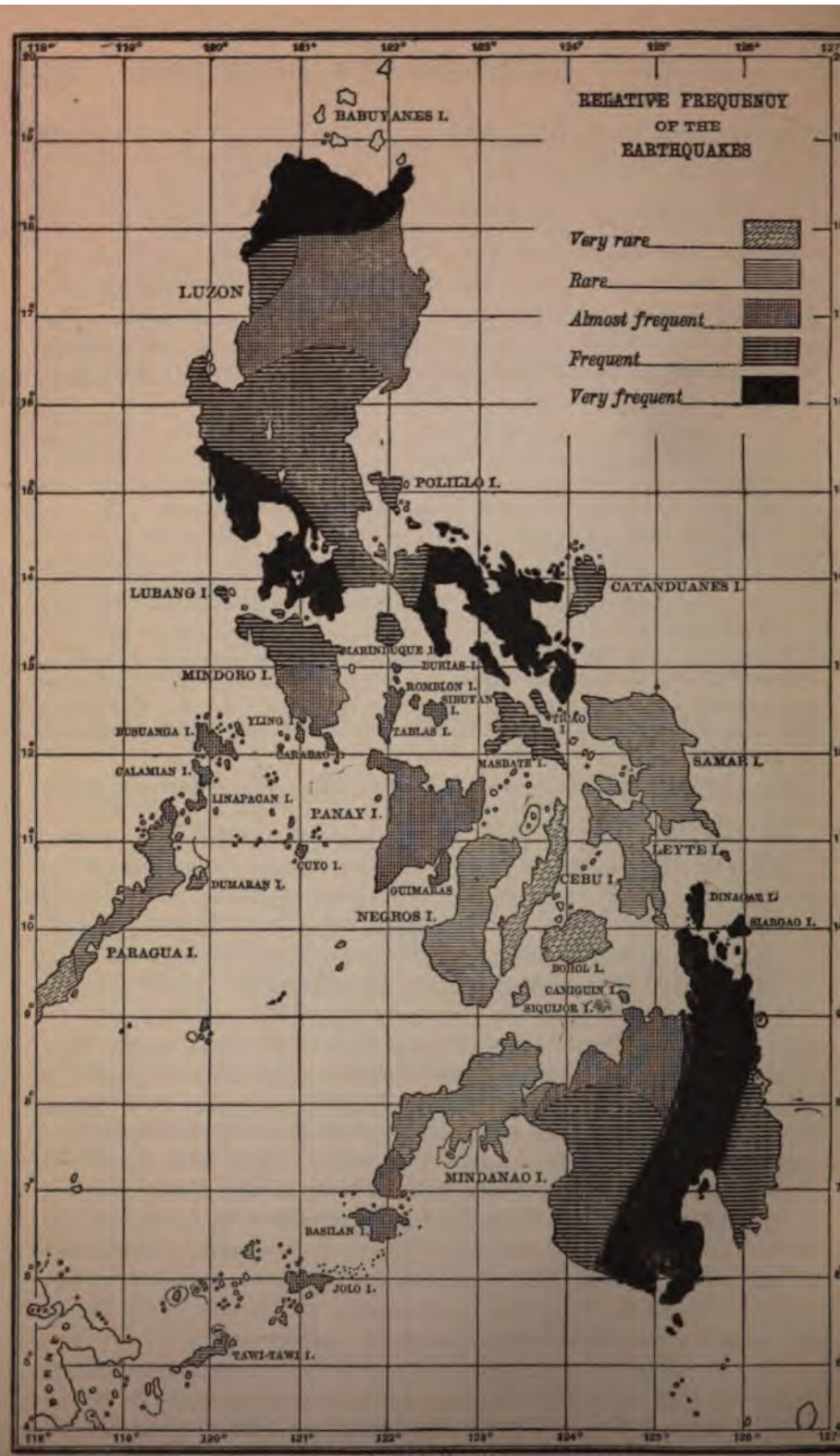
All the centers mentioned are very active, but only the last, those lying in the east-northeast and east, seem, as far as our present knowledge goes, to be dangerous to Manila. The destructive waves experienced in July, 1880, can very probably be ascribed to these centers. The shocks felt on the 14th and 20th radiated from the eastern center, while those felt on the 18th of July radiated from the more distant east-northeastern one. There very probably exists in that direction a partly submarine macroseismic center. Concerning the northwestern part of this epicentric region Mr. H. D. McCaskey, B. S., has recently written:

In my observations in the field I found numerous instances of violent twisting, fracture, and faulting, due in part, at least, to volcanic action and to these andesites and trachytes that form the modern eruptives. Along the Bayabas river, for instance, in several places the stream is choked with tumbled masses of great limestone bowlders, fallen into it, and broken from the strata on the hillsides above; the strata themselves are violently fractured and displaced, the shales farther up the stream are twisted and faulted, and between La Mesa and Bayabas the streams flow at various angles over the synclinal and anticlinal axes of the strata; there are frequent evidences of marked extrusions of andesite and trachyte, and, finally, the escarpments of such cliffs as are seen at Mt. Balite, and at points above Bayabas, tend to the belief in extensive displacements, faulting, and slipping of the entire strata, leaving more or less gradual and regular slopes upon the west and abrupt faces to the east and northeast, certainly not to be ascribed entirely to the effects of erosion.

RELATIVE FREQUENCY OF EARTHQUAKES IN THE ARCHIPELAGO.

Plate XXXVII shows the relative activity of the different centers, or the relative frequency with which the earthquakes have been felt in every region of the archipelago. This plate is chiefly based on the lists gathered during the eighteen years which immediately preceded the war. This is the most complete record at our disposal. The scarcity of data from some provinces has obliged us in some cases to calculate the frequency of the shocks by that of the neighboring provinces, and thus the value of the result is but approximate. The regions referred to are the central districts of Luzón, inhabited by wild tribes, and the islands of Mindoro, Negros, Cebú, Leyte, and Sámar. The reports received from these islands came generally from only one place in each island, namely, the chief town. The values found for Manila are relatively too great, even if we take account of the very perceptible earthquakes alone; and the reason for this is too clear to need explanation. The more active centers are those of Surigao, Albay or Mayón, and Taal. But neither in these nor in other centers is the intensity of the shocks proportional to the frequency of the earthquakes, as is shown in the foregoing chapters.

The mean frequency of earthquakes in the whole archipelago in the eighteen years 1880–1897, is given in the following table, in which the unit taken is the earthquake day as it is considered by many seismologists—that is, omitting the after shocks which are sometimes very


RELATIVE FREQUENCY
OF THE
EARTHQUAKES
Very rare
Rare
Almost frequent
Frequent
Very frequent
BABUYANES I.
LUZON
POLILLO I.
LUBANG I.
CATANDUANES I.
MARINDUQUE I.
DURIAS I.
MINDORO I.
ROMBLON I.
SIBUYAN I.
TIKAO I.
BUSUANGA I.
YLING I.
TABLAS I.
CARABAO I.
MASBATE I.
SAMAR I.
CALAMIAN I.
LINAPACAN I.
PANAY I.
LEYTE I.
CUYO I.
CEBU I.
DUMARAN I.
GUIMARAS
DINAGAT I.
NEGROS I.
SIARGAO I.
PARAGUA I.
BOHOL I.
CANIGUIN I.
SIQUIJOR I.
MINDANAO I.
BASILAN I.
JOLO I.
TAWI-TAWI I.
Longitude E. of Greenwich

numerous during the day of the earthquake itself, and often for many consecutive days.

TABLE 14.—*Earthquakes in the Philippine archipelago, by months, 1880 to 1897, with the mean annual frequency.*

YEAR.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.	Average.
1880	1	4	2	4	.....	2	7	13	8	5	6	4	56	4.7
1881	7	8	8	6	7	4	6	7	13	6	2	6	80	6.7
1882	4	4	4	2	5	7	6	2	9	4	5	3	55	4.6
1883	1	6	4	3	1	2	3	4	3	3	1	1	32	2.7
1884	4	3	4	1	3	5	2	4	4	2	2	7	41	3.4
1885	1	5	3	3	4	1	7	3	3	9	8	3	50	4.2
1886	5	2	2	2	5	3	1	2	1	2	3	1	29	2.4
1887	1	5	6	8	2	3	2	2	4	5	3	2	43	3.6
1888	4	3	2	1	7	2	2	3	3	6	2	6	41	3.4
1889	6	3	1	5	5	2	2	3	4	1	3	3	38	3.2
1890	3	3	2	3	5	4	6	1	1	3	.....	4	35	2.9
1891	3	1	4	3	4	6	3	7	8	3	5	4	51	4.3
1892	6	7	4	6	4	3	6	4	8	3	3	3	56	4.7
1893	5	3	3	5	4	10	5	6	5	2	7	5	60	5.0
1894	4	8	2	9	1	6	8	5	7	4	2	4	60	5.0
1895	7	7	.....	2	7	3	7	6	6	4	9	4	62	5.2
1896	7	6	7	3	8	5	8	10	4	3	3	2	66	5.5
1897	10	9	9	9	10	9	7	8	7	7	15	7	107	8.9
Total	78	87	67	75	82	77	88	90	98	72	79	69	962	80.4
Average	4.3	4.8	3.7	4.2	4.6	4.3	4.9	5.0	5.4	4.0	4.4	3.8	53.4	4.5

From this table we find an average of 53.4 earthquake days for the year, or 4.5 per month; no small number indeed, when we remember that the unit is the earthquake day and that it does not include the subsequent shocks.

The same table also shows a maximum frequency in 1881 and 1897, and a minimum in 1886. Since the year 1893 the numbers show an increase, probably due to the fact that during this period there have been more private observers of such phenomena throughout the islands. Hence we may reasonably expect that when our new meteorological service is established and in working order, the table of the frequency of earthquakes will show a still further increase over that previously given, based on somewhat deficient data.

If, following the method of Mr. Montessus de Ballore, applied by him not only to many European regions, but also to our archipelago, we study the earthquake frequency itself, taking the above period of eighteen years, we shall find the following numbers for the principal provinces of the archipelago:

PROVINCES.	i	s (miles.)	PROVINCES.	i	s (miles.)
Ilocos Norte	3.7	18.3	Batangas	4.2	17.0
Cagayán	3.6	38.6	Tayabas	3.2	26.5
Abra	3.0	19.0	Ambos Camarines	3.9	27.4
Ilocos Sur	3.4	12.7	Albay	4.6	18.1
Nueva Vizcaya	3.4	22.3	Island of Panay	2.0	51.0
Benguet	2.0	21.6	Island of Negros	1.4	30.7
La Unión	2.0	19.7	Island of Sámar	1.1	72.0
Pangasinán	3.0	19.0	Island of Leyte	0.7	61.9
Nueva Écija	3.0	29.1	Zamboanga	1.4	52.0
Zambales	3.4	12.0	Surigao	9.8	21.5
Mórong	3.1	14.3	Cottabato	2.0	73.7
La Laguna	3.6	16.7	Dapitan	1.8	15.1
Manila	12.3	4.6			

Archipelago: i=53.5, s=47.7 miles.

There is some difference between our numbers and those found by Mr. Montessus de Ballore in his recent pamphlet, *Die Seismen der Philippjnen*, Amsterdam, 1901, because he took a very different period, and sometimes the single shock as unity, while we consider only the period running from the year 1880 to 1897, and take the earthquake day as our unit.

IV. ELEVATIONS.

Alphabetical List of the Principal Elevations in the Philippine Islands.

The following table of elevations has been compiled by the Philippine Census Bureau from all accessible sources, including the Gazetteer of the Philippine Islands of the War Department, and maps and charts, including the Atlas of the Philippine Islands, prepared by the Jesuit fathers. Most of the points whose heights are here given are situated near the seacoast, and the heights have evidently been determined by vertical angles from vessels engaged in surveying the coast. Few elevations have been determined in the interior, and these few probably by means of cistern and aneroid barometers. These elevations are, therefore, not of a high degree of accuracy, which is emphasized by the fact that in many cases several measurements have been found of the same point, differing from one another by hundreds of feet. In all such cases the altitude selected is that which had the best authority or seemed, from the probabilities of the case, to be the most nearly correct.

Principal elevations in the Philippine Islands.

Name.	Location.	Height in feet.
Abocai hill	Zambales	872
Abú peak	Zambales	5,540
Abúyog mountain	Leyte	3,874
Aganmala peak	Ilocos Norte	4,700
Agótay peak	Panay	3,764
Aguada peak	Mindoro	3,264
Aguada peak	Cuyo Island	608
Agudo mountain	Surigao	3,200
Agudo mountain	Iloílo	2,815
Agudo mountain	Zambales	3,737
Agutaya Island	Cuyo group	950
Airy mountain	Paragua	3,600
Albaguén Island	Paragua	570
Albako mountain	Cebú	1,400
Albión headland	Paragua	693
Aldea, Cordillera de la	Paragua	361
Alpacó mountain	Cebú	1,508
Alto de Jalajála	Luzón	2,473
Alto peak	Zambales	3,757
Ambil Island	Batangas	2,500
Ambolón mountain	Mindoro	550
Anauayan Island	Guimarás Strait	336
Anuyao mountain	Cagayán	8,123
Apo volcano	Dávao	10,312
Aráyat volcano	Pampanga	3,564
Babac hill	Zambales	624

Principal elevations in the Philippine Islands—Continued.

Name.	Location.	Height in feet.
Babuyán Claro volcano	Babuyanes Islands	3,200
Bacón or Pocdol	Albay	4,667
Bacuyo hill	Mindanao	179
Badián Island	West coast of Sámar	295
Baguiao mountain	Mindanao	1,115
Baguinan mountain	Surigao	1,100
Bagulipat mountain	Masbate	1,826
Bahe mountain	Paragua	2,406
Bahú peak	Joló	2,810
Balábac peak	Panay	4,333
Balábac peak	Balábac Island	1,890
Balabago peak	Iloílo and Antique	1,500
Balago peak	Abra	3,629
Balasuñgáin peak	Paragua	947
Balisang mountain	Tayabas	5,850
Baloy peak	Panay	5,767
Balug Island	Basilan	525
Banájao or Majaijai volcano	La Laguna	7,382
Banaoen mountain	Zambales	3,000
Bange mountain	Calamianes Islands	1,345
Bantayán peak	Puro Island	531
Bantón Island	Romblón	1,918
Báquit mountain	Paragua	1,500
Baring mountain	Paragua	2,100
Basilan Island	Basilan district	3,348
Batbatán hill	Panay	450
Batuá mountain	Tawi Tawi	1,284
Bay peak	Paragua	1,800
Bayabas mountain	Ambos Camarines	5,000
Beaufort peak	Paragua	3,680
Bimuñgan mountain	Ilocos Norte	3,900
Bimuñgan mountain	La Unión and Benguet	5,300
Binmaca mountain	Luzón	5,268
Bintakan mountain	Sorsogón	2,700
Bitinan Island	Joló	720
Bluff Point	Dávao, Mindanao	1,670
Boayan Island	Paragua	910
Bogbog hill	Zambales	777
Bokwillo hill	Zambales	882
Bold peak	Paragua	3,000
Bondulan hill	Guimarás Island	417
Boñgao Island	Tawi Tawi group	1,151
Botac Island	Calamianes Islands	800
Botolan mountain	Zambales	1,847
Broken head	Paragua	1,030
Brow cone	Paragua	1,180
Brow shoulder	Paragua	3,840
Bubuán Island	Basilan	794
Bucás peak	Cebú	984
Bukan hill	Surigao	400
Bulagao mountain	Ilocos Sur	3,629
Bulan peak	Balanguingui Islands	1,184
Bulanjao hills	Paragua	3,500
Bulipongpong Island	Joló group	984
Bulu Island	Ambos Camarines	300
Bulusan volcano	Sorsogón	4,053
Bulutinao mountain	Iloílo and Antique	1,200
Bunauan hill	Surigao	787

Principal elevations in the Philippine Islands—Continued.

Name.	Location.	Height in feet.
Bungayan mountain	Zambales	4,491
Burnay peak	Abra	6,223
But Gaatan hill	Siassi group	735
Butbilao peak	Siassi group	1,273
Butilao peak	Bataán (Mariveles peaks)	4,414
Butpula mountain	Joló Islands	2,739
Butulan mountains	Dávao	4,520
Cabalete mountain	Dinágat Island	1,791
Cabalian mountain	Leyte	3,130
Cabeza de Bontog	Tayabas	1,075
Cabeza de Tablas	Tablas Island	2,405
Cabicuñgan volcano	Cagayán	4,326
Cabiloagan hill	Zambales	827
Cagayán mountain	Joló Islands	1,105
Cagua peak, volcano	Cagayán	4,289
Cairilao mountain	Cavite	2,166
Calavite mountain	Mindoro	2,000
Caldera point	Zamboanga	1,702
Calibugón mountain	Paragua	5,827
Calumpán hill	Masbate	461
Calumutan mountain	Luzón	1,992
Calupag Island	Tawi Tawi	591
Caluya hill	Semirara group	623
Calvario peak	Cagayán	2,149
Camálig peak	Canahauan Island	446
Camamot hill	West coast of Sámar	245
Camasoso Island	Masbate	522
Camiguín Island	Misamis	5,383
Camiguín Island	Babuyanes group	2,790
Camiguín volcano	Camiguín Island	2,392
Canayán Island	Paragua	827
Canen mountain	Dapitan	2,119
Canigo hill	Zambales	508
Canipan hill	Paragua	976
Canlaón or Malaspina volcano	Negros Oriental	8,192
Canmango mountain	Bohol	1,814
Canmanoc peak	Bohol	757
Capisanan hill	Zambales	800
Capnoyan Island	Cuyos Islands	449
Cápoas plateau	Paragua	3,350
Capulujan mountain	Masbate	1,244
Caraballo Sur	Luzón	4,666
Carabao Island	Romblón	720
Casarejo hill	Tawi Tawi Islands	757
Cascada mountains	Dinágat Island	2,395
Catmón mountain	Misamis	2,047
Caua volcano	Cagayán	3,983
Cautarag mountain	Paragua	5,868
Cetáceo mountain	Cagayán	3,451
Cinco Picos	Luzón	3,176
Cleopatra's Needle	Paragua	5,200
Coco Island	Basilan Strait	490
Colilia Verde	Luzón	403
Congcong peak	Panay	3,566
Cónico hill	Dinágat Island	1,049
Copton mountain	Bohol	3,095
Corandagos Island	Sulu Sea	926
Corón Island	Calamianes Islands	1,200

Principal elevations in the Philippine Islands—Continued.

Name.	Location.	Height in feet.
Corregidor Island	Bataán	631
Corte mountain	Bohol	617
Corumí mountain	Paragua	1,600
Crown peak	Calamianes group	1,200
Cuadrado peak	Pampanga	5,443
Cuernos de Negro	Negros Oriental	6,200
Cuirayan mountain	Lepanto-Bontoc	6,200
Cumbre mountain	Dinágat Island	2,300
Cuotingan peak	Siquijor Island	1,394
Dalandem mountain	Luzón	3,900
Danao peak	Cebú	1,548
Dangláy mountain	Leyte	1,145
Datá volcano	Lepanto	7,364
Delián Island	Calamianes Islands	450
Didica volcano	Batánes Islands	700
Dinarán Island	Calamianes group	580
Diogo Island	Batánes group	848
Dit Island	Cuyos Islands	860
Dos Cuernos peak	Cagayán	4,322
Dos Picos	Cavite	1,909
Double peak	Paragua	1,400
Drake peak	Paragua	1,300
Dromedario peak	Tawí Tawí	1,864
Dumanpalit hill	Calamianes Islands	816
Dumarán Island	Paragua	600
East peak	Paragua	1,890
Elizabeth peak	Paragua	3,067
End peak	Paragua	4,512
Estampa hill	Zambales	850
Estilete mountain	Ilocos Sur	4,446
False Sharp peak	Paragua	2,814
Five peaks	Zambales	2,867 2,936 2,999 2,907 3,030
Four peaks	Paragua	4,730 4,800 4,900
Galaton mountain	Tablas Island	1,473
Gap hill	Paragua	1,810
Gemines hill	Tawí Tawí Islands	513
Girayán mountain	Misamis	6,280
Gorro peak	Siassi group	1,673
Gran Malindang	Misamis	8,580
Guindulman mountain	Cebú	1,373
Guinlapaán mountain	Bohol	1,251
Guitiguitin mountain	Sibuyán Islands	6,363
Gulutinao hill	Panay	884
Halcón mountain	Mindoro	8,800
Harbor hill	Paragua	960
Herschel peak	Paragua	2,316
High mountain	Zambales	3,711
High Nipple	Paragua	1,254
High Triple hill	Paragua	3,632
Hoagusan mountain	Dávao	1,148
Iba mountain	Zambales	5,262
Igbanig peak	Panay	4,343

Principal elevations in the Philippine Islands—Continued.

Name.	Location.	Height in feet.
Iher mountain	Zambales	3,000
Ilín mountain	Iling Island	850
Ilinguín hill	Zambales	472
Irada mountain	Batánes Islands	3,806
Iriga volcano	Ambos Camarines	4,092
Isarog volcano	Ambos Camarines	6,634
Iwiig Sierra	Paragua	1,814
Jalajala mountain	Central Luzón	2,278
Javiel peak	Misamis	1,863
Kanpal Island	Joló group	1,036
Kapulujan mountain	Masbate	1,200
Keion mountain	Zambales	3,000
Labo mountain	Ambos Camarines	5,000
Labo Tetas de Polantuna volcano	Ambos Camarines	5,092
Labot mountain	Luzón	5,044
Lagén Island	Paragua	1,140
Lanao Lake	Mindanao	2,200
Lanas mountain	Cebú	1,800
Lanat mountain	Zambales	3,766
Landargun peak	Paragua	5,397
Lapá mountain	Surigao	1,060
Lapac mountain	Lapac Islands	1,293
Lapat mountain	Luzón	3,766
Latoñgan mountain	Dapitan	1,297
Ledán mountain	Cagayán Sulu	1,105
Legaspi peak	Surigao	4,253
Lepata hill	Sámar	718
Lila mountain	Lepanto-Bontoc	4,516
Lingó mountain	Luzón	5,530
Llorente peak	Panay	4,466
Loboó peak	Batangas	3,451
Loghi mountain	Sámar	1,654
Loro mountain	Cavite	2,249
Lubutglubut Island	Calamianes Islands	660
Mabintan mountain	Joló	1,640
Mabuí mountain	Leyte	4,430
Mabuja mountain	Joló	1,095
Macmany point	Zambales	2,467
Macolod mountain	Batangas	2,500
Madiaas mountain	Panay	7,264
Maestre de Campo Island	Romblón	700
Magdoc mountain	Cebú	1,202
Mahuja peak	Joló	1,095
Mainil volcano	Surigao	1,115
Majayjay volcano	La Laguna	7,382
Malabahoc mountain	Siquijor Island	1,138
Malajón Island	Calamianes Islands	753
Malamaui Island	Basilan	538
Malamet mountain	Paragua	1,630
Malangcauan mountain	Leyte	2,294
Malínao mountain	Albay	3,066
Malindang volcano	Mindanao	9,364
Malubutglubut Island	Paragua	758
Manamoc Island	Cuyos Islands	714
Mantaliñgajan peak	Paragua	6,843
Mapay mountain	Zambales	2,000
Maquíling volcano	La Laguna	3,724
Maracañao Island	Cuyos Islands	500

Principal elevations in the Philippine Islands—Continued.

Name.	Location.	Height in feet.
Mariveles peaks	Bataán	4,615
Marorugan hill	Sorsogón	503
Masalacay mountain	Tayabas	2,373
Masalaysay mountain	Cavite	2,807
Masaraga mountain	Albay	5,244
Masilo mountain	Batangas	3,724
Masingloc mountain	Zambales	3,120
Matana mountain	Basilan	2,100
Matangal mountain	Basilan	2,136
Maymagui mountain	Panay	5,667
Mayón volcano	Albay	7,916
Mesa hill	Tawi Tawi Islands	562
Minapan hill	Siassi group	538
Mitra hill	Pagbilao Grande Islands	607
Mitra peak	Lepanto-Bontoc	5,699
Moisés mountain	Isabela	4,604
Monserrat mountain	Lepanto-Bontoc	5,617
Muises mountain	Cagayán	4,170
Mulinja mountain	Joló Island	1,123
Naga mountain	Cebú	1,522
Naganaga mountain	Leyte	1,300
Nagapu mountain	Ilocos Sur	4,154
Nagouliat volcano	Bataán	4,678
Nangá Island	Calamianes Islands	944
Nangtud peak	Panay	6,834
Nanká mountain	Dapitan	1,700
Narosodan mountain	Ilocos Norte	3,013
Negson mountain	Zambales	5,453
Nipple peak	Paragua	2,930
North Bay hill	Balábac Island	880
North hill	Paragua	1,092
Northeast mountain	Tablas Island	2,206
Northwest peak	Tablas	2,187
Nuogan mountain	Panay	4,232
Observatory rock	Paragua	758
Odenete peak	Mindanao	6,214
Pagbilao Island	Tayabas	613
Pagoda cliff	Paragua	2,016
Pagsán mountain	Cagayán	7,261
Pajar peak	Tawi Tawi	826
Palugpagón	Panay	891
Pan de Azúcar	Ilocos Norte	2,530
Pandán mountain	Ticao Island	732
Payte mountain	Luzón	2,000
Peel mountain	Paragua	3,600
Pico de Basilan	Basilan Island	1,950
Pico de Danao	Cebú	1,534
Pico de Loro	Cavite	2,276
Pico Notable	Luzón	3,844
Picudo mountain	Dinágat Island	1,700
Pilas Island	Basilan	918
Pinachiuyan Island	Paragua	1,020
Pinatubo volcano	Pampanga	6,040
Pinoonan mountain	Bohol	2,600
Piquito peak	Cavite	2,099
Playa Honda	Zambales	1,847
Posdey peak	Abra	4,733
Poupit mountain	Joló Islands	2,242

Principal elevations in the Philippine Islands—Continued.

Name.	Location.	Height in feet.
Pulgar mountain	Paragua	4,260
Pulon bato	Mindanao	1,364
Pultoc	Luzón	4,648
Pulute peak	Paragua	3,067
Pupug mountain	Mindanao	4,490
Quebrada peak	Ilocos Norte	3,040
Queen's Bay peak	Paragua	1,030
Quiput mountain	Pata Islands	1,330
Redondo mountain	Zambales	1,975
Redondo peak	Dinágat Island	3,337
Reposet mountain	Isbayat Island	789
Saamong mountain	Sámar	1,729
Sabat mountain	Camarines Norte	5,000
Sabro peak	Ambos Camarines	4,373
Sacripante peak	Leyte	3,911
Saddle hill	Paragua	1,000
Saddle mountain	Dávao	3,600
Sagurun hill	Burias Islands	845
Salacsá mountain	Luzón	3,250
Salekan peak	Paragua	2,815
Sámal Island	Dávao	820
San Isidro mountain	Zambales	2,587
Sangasag mountain	Tayabas	1,300
Sangbauen peak	Paragua	1,816
Sangboy Island	Basilan	841
Sanguil volcano	Balut Island, Dávao	3,117
Sansanan mountain	Iloílo and Antique	1,582
Santa Cruz mountain	Zambales	1,500
Santa Rita mountain	Zambales	1,666
Santa Rosa mountain	Isbayat Island	672
Santa Rosa peak	Bataán	5,479
Santiago peak	Tawi Tawi Islands	1,167
Santo Paulo mountain	Paragua	3,370
Santo Tomás peak	La Unión	7,298
Sarangani volcano	Dávao	3,100
Satélite mountain	Surigao	3,556
Satélite peak	Dapitan	3,261
Sharp peak	Paragua	2,814
Semeneblén mountain	Ilocos Norte and Abra	4,800
Senarañgan mountain	Sámar	1,505
Sharks Fin range	Paragua	1,680
Sharp Shoulder	Paragua	1,680
Sibago Island	Zamboanga	735
Sibala mountain	Iloílo	1,959
Sibuyán mountain	Romblón	6,424
Silanga peak	Paragua	1,700
Silla del Sabani	Tayabas	3,900
Silla peak	Dapitan	1,010
Simara Island	Romblón	870
Sinagsacan peak	Cápiz	1,148
Siyac mountain	Luzón	1,615
Sombrero mountain	Zamboanga	5,200
South Bay hill	Balábac Island	960
Stavely peak	Paragua	3,930
Steepfall mountains	Balábac Island	850
Sultán peak	Paragua	3,820
Suñgay mountain	Cavite	2,483
Susohng-Dalaga	Luzón	1,452

Principal elevations in the Philippine Islands—Continued.

Name.	Location.	Height in feet.
Taal volcano	Batangas	1,050
Tablado mountain	Zambales	3,800
Taghipa peak	Paragua	933
Taguepan mountain	Zambales	3,000
Talim volcano	Rizal	1,519
Talísay hill	Bohol	813
Talogdayan mountain	Zambales	1,196
Tamaun mountain	Batangas	2,818
Tambagaan Island	Tawi Tawi group	725
Tanáoan mountain	Cebú	1,527
Tandat Island	Calamianes group	1,200
Tandubató peak	Tawi Tawi Island	528
Tanglon mountain	North Luzón	7,348
Tantagúan peak	Lepanto-Bontoc	6,382
Tapiantana Island	Basilan	938
Tara Island	Calamianes Islands	730
Tating mountain	Panay	2,789
Tebulían mountain	Cagayán, Sulu	769
Tendido mountain	Surigao	3,251
Tepasi or Ang mountains	Negros	6,244
Tetas de Kataan	Iloílo	393
Tetas de Pitogo	Panay Island	585
Tetas de Santa	Ilocos Sur and Abra	1,400
Thumb peak	Paragua	4,260
Ticbayat peak	Panay	3,367
Tierra Alta mountain	Batangas	2,846
Tiguran peak	Panay	4,900
Tila mountain	Luzón	4,339
Tindalara peak	Calamianes Islands	2,152
Toctocón peak	Panay	4,667
Tonglón mountain	Caraballos Occidentales	7,340
Tormajan-agung mountain	Sorsogón	2,359
Transept hill	Balábac Island	1,300
Triple hill	Paragua	960
Tristán mountain	Surigao	2,074
Tub hill	Tawi Tawi Islands	718
Tulipán mountain	Joló	2,107
Tuluran Island	Paragua	1,267
Tumahu mountain	Joló	1,573
Tumatanguis peak	Joló	2,940
Tundalara peak	Busuanga Island	2,152
Tuno peak	Panay	3,700
Ulankaya Abdul peak	Siassi group	689
Úling mountain	Cebú	2,172
Upao mountain	Panay	1,540
Urdaneta mountain	Surigao	6,797
Usigan peak	Panay	4,300
Verde mountain	Zambales	1,207
Vicars Camp	Cottabato	3,100
Victoria peak	Paragua	5,680
Vigía peak	Tawi Tawi group	1,151
Village range	Paragua	1,186
Vuetta de Tiobas	Panay	354
Vuetta Ternate hill	Aguada Island	741
Yangis mountain	Zambales	1,500

V. ISLANDS OF THE PHILIPPINE ARCHIPELAGO.

BY GEORGE R. PUTNAM,

Of United States Coast and Geodetic Survey.

Summary of islands of the Philippine archipelago.

Number of islands having area—	
10,000 square miles or more	2
1,000 square miles or more, and less than 10,000 square miles	9
100 square miles or more, and less than 1,000 square miles	20
10 square miles or more, and less than 100 square miles	73
1 square mile or more, and less than 10 square miles	262
0.1 square mile or more, and less than 1 square mile	729
Less than 0.1 square mile	2,046
Total	3,141
Number of islands listed by name	1,668
Number of islands and islets not named	1,473
Total	3,141

Total area of the Philippine Islands, 115,026 square statute miles.

Islands of the Philippine archipelago having an area larger than 100 square miles.

ORDER.	Island.	Area in square miles.	ORDER.	Island.	Area in square miles.
1	Luzón	40,969	17	Joló	326
2	Mindanao	36,292	18	Tablas	324
3	Sámar	5,031	19	Dinágat	309
4	Negros	4,881	20	Tawi Tawi	232
5	Panay	4,611	21	Guimarás	228
6	Paragua	4,027	22	Burias	197
7	Mindoro	3,851	23	Biliran	190
8	Leyte	2,722	24	Sibuyán	171
9	Cebú	1,762	25	Culión	153
10	Bohol	1,441	26	Siargao	151
11	Masbate	1,236	27	Sámal	147
12	Catanduanes	682	28	Balábac	122
13	Basilan	478	29	Dumarán	122
14	Busuanga	390	30	Ticao	121
15	Marinduque	352	31	Siquijor	106
16	Polillo	333			

Islands of the Philippine archipelago, arranged geographically from north to south.

ISLAND AND LOCATION.	Area in square miles.
BATÁN ISLANDS, north of Luzón (Cagayán province):	
Y'Ami	0.4
North	0.2
Mabadis	0.6
Siayan	0.2
Isbayat	26.0
Diego	0.6
Batán	24.0
Saptán	9.7
Ibugos	1.6
Déquez	0.2
40 unnamed islets and rocks, areas not specified, sum.	0.1
50	63.6
BABUYÁN ISLANDS, north of Luzón (Cagayán province):	
Balintang	0.5
Babuyán	46.0
Pan de Azúcar	0.1
Panuitan	0.6
Calayán	42.0
Dalupiri	24.0
Irao	0.4
Mabac	0.2
Jugu	24.0
Bari	0.6
Camiguing	61.0
Font	0.7
Island southwest of Babuyán	1.0
5 Wyllie rocks	0.1
4 Dedicas rocks	.....
3 Guinápac rocks	.....
14 unnamed islets and rocks, areas not specified, sum.	0.2
39	201.4
LUZÓN ISLAND	40,969.0
NORTH COAST OF LUZÓN (Cagayán province):	
Palaui	9.1
San Vicente	0.1
2 Hermanos	.....
Escucha	.....
Roña	.....
Gran Laja	.....
7 unnamed islets and rocks, areas not specified, sum.	0.2
14	9.4
WEST COAST OF LUZÓN (Ilocos Norte province):	
Badoc	0.2
2 unnamed islets and rocks, areas not specified, sum.	.....
3	0.2
WEST COAST OF LUZÓN (Ilocos Sur province):	
Salomague	0.4
Pingit	0.7
2	1.1
WEST COAST OF LUZÓN (Pangasinán province):	
Cabalitían (Lingayén gulf)	1.0
Calpay rock (Lingayén gulf)	.....
11 unnamed islets and rocks, areas not specified, sum.	0.1
13	1.1
WEST COAST OF LUZÓN (Zambales province):	
Comas (Lingayén gulf)	0.6
38 Hundred Islands (Lingayén gulf)	0.6
Alo (Lingayén gulf)	.....
Anda (Lingayén gulf)	30.0
Narra (Lingayén gulf)	0.2
Cangaluyan (Lingayén gulf)	0.1
Santiago (Lingayén gulf)	8.0
Tagaporo (Lingayén gulf)	0.2
Silaquí (Lingayén gulf)	.....
Tambac (Lingayén gulf)	.....
Gayaman (Lingayén gulf)	.....
Manoc (Lingayén gulf)	.....
Panacalan (Lingayén gulf)	.....
Tandoyong (Lingayén gulf)	.....
Cangaluyan (Lingayén gulf)	.....
3 Dos Hermanos (Lingayén gulf)	.....
Culebra	.....
Ratón	.....
Hermana Mayor	1.9
Hermana Menor	0.4
San Salvador	1.5
Iagat	.....
Matalvi	0.4
Macalabá	0.4

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
WEST COAST OF LUZÓN (Zambales province)—Continued.	
Capon Grande (Capones Islands)	0.1
2 Tabones	.....
Silanguin	0.4
Pequeña	.....
Mayañga	.....
Gaviota rock	.....
Cangrejo rock	.....
Grande	0.1
4 Los Frailes	.....
24 unnamed islets and rocks, areas not specified, sum.	0.3
100	45.2
WEST COAST OF LUZÓN (Bataán province):	
4 Los Cochinos	.....
2 Pulomonti rocks	.....
6	.....
WEST COAST OF LUZÓN (Pampanga province):	
Tubutubo (Manila bay)	0.7
WEST COAST OF LUZÓN (Cavite province):	
La Monja	.....
Corregidor	1.9
Horadada rock	.....
Santa Amalia rock	.....
Caballo	0.1
El Fraile	.....
Carabao	0.1
Limbones	0.1
Campanario	.....
6 unnamed islets and rocks, areas not specified, sum.	0.1
15	2.3
WEST COAST OF LUZÓN (Batangas province):	
Fortune	0.4
Maricabán	12.0
Caban	.....
Sombrero	.....
Culebra	.....
Malajibo manoc	.....
Verde	6.1
5 unnamed islets and rocks, areas not specified, sum.	0.2
12	18.7

ISLAND AND LOCATION.	Area in square miles.
SOUTHWEST COAST OF LUZÓN (Tayabas province):	
Pagbilao Grande	8.7
Pagbilao Chico	1.5
Alibíjaban	1.7
Palad bank	.....
Patayan	.....
San Juan	.....
Cueva	.....
San Andrés	.....
Talaban	.....
Sipalun	.....
18 unnamed islets and rocks, areas not specified, sum.	0.1
28	12.0
SOUTHWEST COAST OF LUZÓN (Ambos Camarines province):	
Saboón	0.5
Carabang	.....
Galvaney	.....
Refugio	.....
2 unnamed islets and rocks, areas not specified, sum.	0.1
6	0.6
SOUTHWEST COAST OF LUZÓN (Albay province):	
Solitario	.....
SOUTHWEST COAST OF LUZÓN (Sorsogón province):	
Bagatao (Sorsogón bay)	2.3
Sablayán (Sorsogón bay)	1.3
Malumahúan (Sorsogón bay)	0.1
Batán (Sorsogón bay)	0.2
3 Matagdac (Sorsogón bay)	.....
Lavampá (Sorsogón bay)	.....
Maririg (Sorsogón bay)	.....
2 Tumalaytay (Sorsogón bay)	.....
Leshuec (Sorsogón bay)	.....
2 Dibughán (Sorsogón bay)	.....
2 Malazimbo Islands (Sorsogón bay)	.....
Binaculan (Sorsogón bay)	.....
Cabulagan (Sorsogón bay)	.....
Casiburan (Sorsogón bay)	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
SOUTHWEST COAST OF LUZÓN (Sorsogón province)—Cont'd.	
Guaraydajo (Sorsogón bay)	.....
Tinacos (Sorsogón bay)	.....
Panurayan (Sorsogón bay)	.....
Poldoc (ports Putiao and Panlatúan)	.....
3 Doña Ana (ports Putiao and Panlatúan)	.....
Borón (ports Putiao and Panlatúan)	.....
Punahúan (ports Putiao and Panlatúan)	.....
Puro (ports Putiao and Panlatúan)	.....
14 unnamed islets and rocks, areas not specified, sum	0.5
43	4.4
EAST COAST OF LUZÓN (Cagayán province):	
4 unnamed islets and rocks, areas not specified, sum	.....
EAST COAST OF LUZÓN (Isabela province):	
Gay	0.1
Estagno	.....
10 unnamed islets and rocks, areas not specified, sum	0.1
12	0.2
EAST COAST OF LUZÓN (Tayabas province):	
2 Los Confites	.....
Distoring	.....
10 Los Carabaos	.....
Alabat	95.0
Cagbalete	10.0
Balesín	1.5
Palupari	0.4
Baliscan	0.1
10 unnamed islets and rocks, areas not specified, sum	0.2
28	107.2
POLILLO AND ADJACENT ISLANDS (Tayabas province):	
Polillo	333.0
Patnanongan	29.0
Palasan	13.0
Jomálig	30.0
Buguítay	0.6
Cabalúa	1.4
POLILLO AND ADJACENT ISLANDS (Tayabas province)—Cont'd.	
Teolong	1.9
Anilon	1.0
Malaguinoan	1.3
Cagayán	0.4
Calocot	1.2
Cabungeoán	1.3
Pangdan	0.4
Malamis	0.4
Catabunan	0.2
Macagiuna	0.6
Macaguilir	0.6
Minalolo	0.8
Minaman	0.5
Cococ	0.2
Minasaua	0.5
Calaguian	1.5
Iquicon	0.2
Lantao	0.5
Manlanat	0.4
1 unnamed islet, area not specified	.....
26	420.9
EAST COAST OF LUZÓN (Ambos Camarines province):	
Jaulo	0.2
5 Dajican (including Tabusao)	0.4
Tinagá (Calaguas Islands)	12.0
Guintinúa (Calaguas Islands)	7.0
Maculabo (Calaguas Islands)	2.6
Samur (Calaguas Islands)	1.7
Pinacuapan (Calaguas Islands)	0.5
Calagua (Calaguas Islands)	1.4
Cagbalísay (Calaguas Islands)	1.5
Siapa (Calaguas Islands)	1.4
Ingalan (Calaguas Islands)	0.5
6 Tanao	0.1
Thurston rock	0.1
Matandumaten	0.1
Quinamanucá	1.0
Quinalasag	18.0
Lamit	9.4
Canimó	3.0
Cantón	0.4
Carigno	0.9
2 Rosa islets	1.2
Siruma	0.7
Cahúit	0.4
San Miguel	0.1

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
EAST COAST OF LUZÓN (Ambos Camarines province)—Cont'd.	
Botauanan	2.5
Paniqui	0.1
6 Sibauan	0.5
Bacacay	0.5
Laja	.....
Lahuy	8.6
Quinabugan	0.6
Quinalugan	3.4
Basot	1.5
Amalia	.....
Paquita	.....
Lunguipao	0.4
2 Catanaguan	0.8
Pitogo	0.1
3 Palompon islets	.....
Rosa	.....
Atoloyan	0.1
53 unnamed islets and rocks, areas not specified, sum.	2.0
112	85.7
EAST COAST OF LUZÓN (Albay province):	
San Miguel	8.2
Cagraray	33.0
Batán	34.0
Rapurapu	25.0
Burias	.....
Cagbulauan	0.2
Guininyan	0.1
Minoro	.....
14 unnamed islets and rocks, areas not specified, sum.	0.3
22	100.8
CATANDUANES AND ADJACENT ISLANDS (Albay province):	
Catanduanes	682.0
4 Palumbanes	1.3
Matalin	0.1
3 Horadaba rocks	0.1
Panay	2.4
Minigil	0.2
Island west of Panay	0.4
Island in Port Barás entrance	0.1
Island off Cabúgao river mouth	0.2
7 unnamed islets and rocks, areas not specified, sum.	0.2
21	687.0

ISLAND AND LOCATION.	Area in square miles.
EAST COAST OF LUZÓN (Sorsogón province):	
Biñgay	.....
Handauan	1.3
Ticlín	0.2
Juac	0.4
Calintaan	1.3
Burungburuñgan	.....
Mantaid	.....
Porong	.....
San Bernardino Islands	.....
Magtimua rock	.....
Apari rock	.....
Calantás rock	.....
3 unnamed islets and rocks, areas not specified, sum.	0.2
15	3.4
LUBANG ISLANDS (Mindoro province):	
Lubang	66.0
Ambil	11.0
Golo	7.8
Cabra	2.6
Mandaui	0.1
Malavatúan	.....
5 Talinas	.....
48 unnamed islets and rocks, areas not specified, sum.	0.1
59	87.6
MINDORO AND ADJACENT ISLANDS (Mindoro province):	
Mindoro	3,851.0
Medio	0.3
Paniquían	0.3
2 Bacós	0.1
Baco Chico	.....
Silonay	0.1
Anaganáhao	.....
Tujud	.....
Buyallao	0.3
Soguícay	0.1
Tambarón	0.5
Maasin	0.1
Aslom	.....
Silat	.....
2 Alibatan	.....
Garza	.....
Iling	31.0
Ambolón	4.0
Donjon	.....
Manadí	.....
Tajui	.....
Iriron rock	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
MINDORO AND ADJACENT ISLANDS (Mindoro province)—Continued.	
2 Pandán	0.1
Black rock	.....
Libagao	0.6
Nagúbat	.....
Semirara	25.0
Sibolon	0.8
Sibatón	0.5
Caluya	3.7
Sibay	15.0
Panagatan	2.3
17 unnamed islets and rocks, areas not specified, sum.	0.3
52	3,936.1
MARINDUQUE AND ADJACENT ISLANDS (Tayabas province):	
Marinduque	352.0
2 San Andrés	.....
Banot	0.1
Santa Cruz	2.6
Maniwaya	1.9
Mongpong	1.5
Island east of Marinduque	0.9
Elefante	.....
Gaspar (Tres Reyes Islands)	0.5
Melchor (Tres Reyes Islands)	0.1
Baltasar (Tres Reyes Islands)	0.2
Agpitan (Port Banacalan)	.....
Ataá (Port Banacalan)	.....
Madumug (Port Banacalan)	.....
Salvaría (Port Banacalan)	.....
Pangapasan (Port Banacalan)	.....
Carlota (Dos Hermanas Islands)	0.4
Isabel (Dos Hermanas Islands)	0.4
3 unnamed islets and rocks, areas not specified, sum.	0.5
22	361.1
ROMBLÓN, TABLAS, AND ADJACENT ISLANDS (Romblón province):	
Maestre de Campo	8.9
Bantón	11.0
Bantoncillo	0.1
ROMBLÓN, TABLAS, AND ADJACENT ISLANDS (Romblón province)—Continued.	
Simara	5.4
Tablas	324.0
Carabao	12.0
Cabahan	0.1
Cobrador	0.6
3 Cascarro	.....
Alad	1.3
Logbon	0.3
Tinang	.....
Bañgud	.....
Romblón	37.0
Sibuyán	171.0
Cresta de Gallo	0.1
17 unnamed islets and rocks, areas not specified, sum.	0.8
35	572.6
BURIAS ISLAND (Masbate province):	
Burias	197.0
Busín	1.7
Templo	1.7
4 Tinalisayan	.....
Tanguingui	.....
2 Sombrero	.....
Ánima Sola	.....
Arena	.....
Medio (Port Busaiñga)	.....
3 Boca	.....
Gorrión	.....
20 unnamed islets and rocks, areas not specified, sum.	0.4
37	200.8
TICAO ISLAND (Masbate province):	
Ticao	121.0
Bagabáboy (Port San Miguel)	0.2
San Miguel (Port San Miguel)	0.1
Catpatin (Port San Miguel)	0.1
Faltaban (Port San Miguel)	.....
Yeso (Port San Miguel)	.....
3 Puro (Port San Miguel)	.....
Matabao	0.4
Buju	.....
Tatus	.....
4 unnamed islets and rocks, areas not specified, sum.	0.5
16	122.3

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
MASBATE ISLAND (Masbate province):	
Masbate	1,236.0
Magaguilanguilan (Port Barrera)	.....
Amoron (Port Barrera)	.....
Pamontalan (Port Barrera)	0.1
Balaíuac (Port Barrera)	.....
Talintig (Port Barrera)	.....
Magearagui	0.3
Jamoraon	0.1
Daquitdaquit	.....
Adyagan	1.0
Cudao	.....
Baslay	.....
Bugtong	0.5
Balanguingué	.....
Guinauayan	0.3
Nagarao	.....
Nabugtú	.....
Naro Grande	2.2
Naro Chico	0.4
Pobre	0.1
Guinlabagan	.....
Gilutugan	0.1
Namatían	.....
Manoc	.....
Guinluthagan	.....
Piña	0.1
Naguran	.....
Jintotolo	1.9
Camasoso (Nin bay)	0.1
Carogo (Nin bay)	0.6
Tumalaytay	0.1
Napayauan	1.3
Bagunbanúa	.....
Nabugtut	0.1
Majaba	0.3
Natimbunan	.....
Gato	.....
Bennet bank	.....
14 unnamed islets and rocks, areas not specified, sum	0.5
52	1,246.1
PANAY ISLAND	4,611.0
NORTH COAST OF PANAY (Cápiz province):	
Burucáy	5.8
3 Taguadián	.....
Floripon (Bañgá bay)	1.7
Pandán (Bañgá bay)	1.7
Tabón (Bañgá bay)	1.3
Mabaay (Sapián bay)	.....
Mahabang (Sapián bay)	.....
Maráos (Sapián bay)	.....
NORTH COAST OF PANAY (Cápiz province)—Continued.	
Malaya (Sapián bay)	.....
Tuat	.....
Talon (Cápiz bay)	0.1
Batongbagui (Cápiz bay)	.....
Mantaliñgá	.....
Nagtig	0.1
Alutayan	0.2
Zapato mayor	0.1
Zapato menor	.....
Chinela	.....
6 unnamed islets and rocks, areas not specified, sum	0.4
26	11.4
NORTHEAST AND SOUTHEAST COASTS OF PANAY (Iloílo province):	
Manigonigó	.....
Nabunut	0.4
Tulunanáun	0.4
Balbagan	0.1
Sand	.....
North Gigante (Gigantes Islands)	1.7
South Gigante (Gigantes Islands)	1.8
Uaidajon (Gigantes Islands)	.....
Bantigui	.....
Cabúgao	0.1
Antonia	0.1
Pulupantao	.....
Tabugun	0.2
Adcalayo	.....
Binuluañgan	2.1
Maglle	0.1
Labnó	0.1
Calagnán	8.3
Sicogon	4.6
Cañas	0.1
Tumaguín	0.1
Luginut	0.2
Bulubadián	.....
Pañgalancalañgan	.....
Bagasipal	.....
Manipulón	0.1
Bayas	0.3
Maliuya	.....
Ragalumbi	0.1
Culebra	.....
Bagaisi	.....
Naborot	.....
Pan de Azúcar	7.5
Bitad	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
NORTHEAST AND SOUTHEAST COASTS OF PANAY (Iloílo province)—Continued.	
Tagil	4.3
Sombrero	0.1
Maguho	.....
Buglug	0.1
Malañgabang	0.9
Bulubadiañgán	2.9
Dunao	.....
Bagabú	.....
Baliguían	.....
Tagubanjan	6.4
Binanan	0.8
Anauayan	0.1
Sálog	.....
Burí	0.1
Nasiducang	.....
Bayang	.....
Calabazas East	0.3
Calabazas West	0.2
Pepitas rocks	.....
7 Siete Pecados	.....
Bantigui rocks	.....
Naburul	0.1
Guimarás	228.0
Nadulao (Guimarás strait)	0.5
Nalungá (Guimarás strait)	0.8
Inampulugan (Guimarás strait)	6.0
Susan (Guimarás strait)	.....
Náuay (Guimarás strait)	0.1
Nagarao (Guimarás strait)	.....
Nalibas (Guimarás strait)	.....
Guiuanón (Guimarás strait)	0.9
Panubulon (Guimarás strait)	0.9
3 Unisan (Guimarás strait)	.....
Island southwest of Guimarás Island	0.3
44 unnamed islets and rocks, areas not specified, sum	2.0
120	284.2
WEST AND SOUTH COASTS OF PANAY (Antique province):	
Juraojurao	0.3
Nogas	0.3
Maralison	0.1
Batbatán	2.3
Maningning	0.3
Seco	.....
WEST AND SOUTH COASTS OF PANAY (Antique province)—Continued.	
Sombrero rock	.....
Areas not specified, sum	0.1
	3.4
NEGROS ISLAND	4,881.0
COASTS OF Negros Occidental province:	
Ilacon (north coast)	0.1
Suyac (north coast)	0.1
Bocaboc (northeast coast)	1.2
Bagunbanúa (northeast coast)	0.1
Refugio, or Sipanay (east coast)	1.2
Anajauan (west coast)	.....
Agutayan (west coast)	.....
Danjugan (west coast)	0.2
22 unnamed islets and rocks, areas not specified, sum	0.4
29	2.1
COASTS OF Negros Oriental province:	
North Bais (Polodiot), (east coast)	0.6
South Bais (Polodacut), (east coast)	2.7
Pampanga rocks (southeast coast)	.....
Apo (southeast coast)	0.4
Siquijor (southeast coast)	106.0
2 unnamed islets and rocks, areas not specified, sum	0.1
8	111.0
CEBÚ AND ADJACENT ISLANDS (Cebú province):	
Cebú	1,762.0
Tanguingui (northwest of Cebú)	0.1
Guintacan (northwest of Cebú)	3.0
Bantayán (northwest of Cebú)	47.0
Don Islands (northwest of Cebú)—	
One island	1.3
One island	0.2

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
CEBÚ AND ADJACENT ISLANDS (Cebú province)—Continued.	
Don Islands (northwest of Cebú)—Continued.	
One island	0.5
One island	0.1
One island	0.4
One island	0.4
One island	0.1
Hilotongan (northwest of Cebú)	1.0
Gibitupil (northwest of Cebú)	0.9
Gato (northwest of Cebú)	.....
Malapascua (northwest of Cebú)	0.2
Chocolate (northwest of Cebú)	.....
Calangaman (east of Cebú)	0.1
Capitancillo (east of Cebú)	0.2
Pasijan (Camotes Islands)	38.0
Poro (Camotes Islands)	36.0
Posón (Camotes Islands)	16.0
Talong (Camotes Islands)	0.1
Pupu (east of Cebú)	0.2
Mactán (east of Cebú)	25.0
Olango (east of Cebú)	3.9
Cáuit (Cebú harbor)	.....
Lava (Cebú harbor)	0.1
Sumilon (east of Cebú)	0.2
Badian (west of Cebú)	0.6
Pescador (west of Cebú)	0.3
15 unnamed islets and rocks, areas not specified, sum.	0.9
45	1,938.8
SÁMAR ISLAND (Sámar province)	5,031.0
WEST COAST OF SÁMAR ISLAND (Sámar province):	
Dalupiri	11.0
Capul	13.0
Moroporo	.....
San Andrés (Naranjos Islands)	1.3
Escarpada (Naranjos Islands)	1.4
Aguada (Naranjos Islands)	1.3
Dársena (Naranjos Islands)	0.4
Medio (Naranjos Islands)	0.3

ISLAND AND LOCAT	Area in square miles.
WEST COAST OF SÁMAR ISLAND (Sámar province)—Continued.	
Rasa (Naranjos Islands)	0.4
Binanotan (Naranjos Islands)	.....
Destacada	2.2
Canaguayón	0.1
Sojotón	.....
Tagapulan	13.0
Sibugay	0.1
Talajib	8.6
Bagasipul	0.1
Tomasa	0.9
Arturito	.....
María	.....
Camandag	3.7
Pilar	.....
Limbancauayan	8.0
Binalio	.....
Damita	.....
Island east of Damita	0.1
Libucan Dacó (Libucan Islands)	1.9
Tangad Libucan (Libucan Islands)	0.1
Libucan Gutiay (Libucan Islands)	0.1
3 Curo Coayan (Libucan Islands)	.....
Layalaya (Libucan Islands)	.....
Timpasan (Canahauan Islands)	1.0
Canahauan Dacó (Canahauan Islands)	1.1
Batgoñgon (Canahauan Islands)	0.3
Boloang (Canahauan Islands)	0.1
Canahauan Gutiay (Canahauan Islands)	0.1
Balading Dacó (Canahauan Islands)	.....
Canmamot (Canahauan Islands)	.....
Tañgad (Canahauan Islands)	.....
2 Cambidsós (Canahauan Islands)	.....
Borobalato (Canahauan Islands)	.....
Balading Gutiay (Canahauan Islands)	.....
11 Cavantiguianes (Canahauan islands)	.....
Tagdaranas, north island	0.1
Tagdaranas, south island	0.1
2 Canaguallón	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

	ISLAND AND LOCATION.	Area in square miles.
	WEST COAST OF SÁMAR ISLAND (Sámar province)—Continued.	
	Majacob	.....
	Masasunguiao	.....
	Burí	0.9
2	Cagdullón	.....
	Cambarugan rock	.....
	Malutagaui	.....
	Darajuay, south island	0.1
	Darajuay, north island	.....
	Daram	35.0
	Parasan	3.4
	Taratara	.....
	Danaodanauan	.....
	Bancalayot	.....
	Catumbal	.....
	Mandagaran gutiay	.....
	Mandagaran dacó	.....
	Badian	.....
	Mariquitdaquit	.....
3	Panituan Islands	.....
2	Aocon	.....
	Bacsal, east island	0.1
	Bacsal, west island	.....
	Solop	.....
	Numing	.....
	Mandon	.....
	Guintarcan, or Lintarcan	1.5
	Macaratu	.....
	Balubaluan	.....
	Buhol	.....
	Malapandan	.....
	Maribuhoc	.....
	Laminĝao	0.4
	Quindoc	.....
	Buad	13.0
	Macatul	.....
	Maroporo	.....
	Buntay	.....
	Majaba	0.4
	Basiao	0.1
	Malanton	.....
	Mactión	.....
	Poro	0.1
	Uacuac	.....
44	unnamed islets and rocks, areas not specified, sum.	1.0
151		126.8
	NORTH COAST OF SÁMAR ISLAND (Sámar province):	
	Biri (Balicuatro Islands)	5.7
	Talísay (Balicuatro Islands)	1.3
	NORTH COAST OF SÁMAR ISLAND (Sámar province)—Continued.	
	Magesang (Balicuatro Islands)	0.8
	Makadlao (Balicuatro Islands)	0.4
	Island north of Makadlao (Balicuatro Islands)	0.1
	Tiñau (Balicuatro Islands)	0.9
	Cagnipa (Balicuatro Islands)	0.6
	Macarite (Balicuatro Islands)	0.6
	San Juan	2.8
	Bani	2.2
	Maravilla	0.8
	Nagnasa	0.1
	Elonbachid	0.1
	Cocoanut	0.2
	Gilbert	4.4
	Green	.....
	Ugamut	0.4
	Foot	.....
	Bat	0.1
	Cabaun	3.5
	Palijon	0.4
	Hirapsán	0.3
	Cajoagan	0.1
	Livas	0.1
	Cajayagan	1.3
	Batag	17.0
	Laguán	9.5
	Calapán	0.1
	Sinobughan	.....
	Maggano	.....
	Bacán	0.3
39	unnamed islets and rocks, areas not specified, sum.	1.0
70		55.1
	EAST COAST OF SÁMAR ISLAND (Sámar province):	
	Higunum	0.4
	Natuntugan	0.1
	Canabayón	0.1
	Binarayan	0.4
	Alugan	.....
	Tubabat	0.1
	Hilabaan	1.9
	Banján	.....
	Linao	0.1
	Fulín	0.1
	Pásig	0.1
	Uguis	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

	ISLAND AND LOCATION.	Area in square miles.
	EAST COAST OF SÁMAR ISLAND (Sámar province)—Continued.	
	Macata	0.1
	Macalayo	0.1
	Catalaban	1.2
	Island southwest of Catalaban	0.1
	Isac	.....
	Andis	0.3
	Divinubo	0.1
2	Dos Cocos	.....
	Maiduum	.....
	Minasagau	.....
	Minanut	0.5
	Iniyao	.....
	Masisiñgi	0.6
	Lalauigan	0.3
	Pugpucanan	0.6
	Anajao	0.6
	Minadion	.....
	Minaloa	.....
	Linoa	.....
30	unnamed islets and rocks, areas not specified, sum.	1.5
62		9.3
	SOUTH COAST OF SÁMAR ISLAND (Sámar province):	
	Buaya (San Juanico strait)	0.1
	Dabun (San Juanico strait)	.....
	Santa Rita (San Juanico strait)	.....
	Torre (San Juanico strait)	.....
	Guintiguían (San Juanico strait)	.....
	Usón (San Juanico strait)	0.1
	Cabalanan (San Juanico strait)	.....
	Jinamog (San Pedro bay)	0.5
	Enoruan (San Pedro bay)	.....
	Punubulon (San Pedro bay)	.....
8	Camaropundan (San Pedro bay)	.....
	Raso (San Pedro bay)	.....
	Badungbadung (San Pedro bay)	.....
	Mariquitdaquit (San Pedro bay)	.....
	Lahuán	.....
	Onás	.....
	Balinatio	0.8
	Baúl	.....
	Binabasalan	.....
	SOUTH COAST OF SÁMAR ISLAND (Sámar province)—Continued.	
	Borabo	.....
	Botic	1.3
2	Canigaran	.....
	Cantican	.....
	Bagambanua	.....
	Cabalarían	.....
	Caninoan	.....
	Tobábao	2.1
	Inatoulan	0.1
	Manicani	3.9
	Ratón	.....
	Calicoan	9.0
	Leleboón	0.1
	Candolu	0.4
	Malhón	33.0
	Sulúan	1.0
91	unnamed islets and rocks, areas not specified, sum.	1.5
134		53.9
	LEYTE ISLAND (Leyte province):	
	Leyte	2,722.0
	Maripipí (north coast)	10.0
	Biliran (north coast)	190.0
3	Sambabúas (north coast)	.....
	Tagampul (north coast)	.....
	Tomasa (north coast)	.....
	Tincansan (north coast)	0.1
	Genurúan (north coast)	0.1
	Calutan (north coast)	.....
	Caygan (north coast)	.....
	Culajit (north coast)	.....
	Poro (north coast)	0.1
	Lagnay (north coast)	.....
	Calumpijan (north coast)	.....
	Calaguan (San Juanico strait)	0.1
	Cananay (San Juanico strait)	0.1
	Ivantacut (San Juanico strait)	.....
	Caltagan (San Juanico strait)	0.4
	Navahay (San Juanico strait)	0.1
	Nababuy (San Juanico strait)	0.1
	Bácol (San Juanico strait)	2.6
3	Caracapan (San Juanico strait)	.....
	Bagasumbut (San Juanico strait)	.....
	Bagácay (San Juanico strait)	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
LEYTE ISLAND (Leyte province)—Continued.	
Redondo (San Juanico strait)	---------
Lazareto (San Juanico strait)	---------
Bacalan (San Juanico strait)	---------
Pantanio (San Juanico strait)	---------
Dio (east coast)	---------
Pelada rock (east coast)	---------
Cabugan Grande (east coast)	1.2
Cabugan Chico (east coast)	0.4
Panaón (south coast)	71.0
Limasagua (south coast)	5.0
Canigao (west coast)	0.1
Jimuquitan (west coast)	0.1
Apid (west coast)	0.1
Duquio (west coast)	0.1
Majabas (west coast)	0.1
Gumalac (west coast)	0.6
Taboc (west coast)	0.1
Dauajon (west coast)	---------
Gigantañgan (west coast)	1.4
Carnasa (west coast)	0.9
María (west coast)	---------
3 Manocmanoc (west coast)	---------
18 unnamed islets and rocks, areas not specified, sum.	1.0
70	3,007.8
BOHOL ISLAND (Bohol province):	
Bohol	1,441.0
Cabílao (north coast)	2.1
Sandingan (north coast)	2.0
Calape (west coast)	1.7
Mantacao (north coast)	0.1
Yuanoan (north coast)	0.1
Butlang (north coast)	---------
Jayaang (north coast)	0.1
Cabgán (north coast)	0.1
Maagpit (west coast)	---------
Magban (north coast)	---------
Sitsitoan (north coast)	---------
Banón (north coast)	0.1
Batás (north coast)	0.3
Ambugan (northwest coast)	0.1
Bagambanua (north coast)	---------
Malicaboc (north coast)	0.1
Coaming (north coast)	0.1
Bagatusan (north coast)	---------
BOHOL ISLAND (Bohol province)—Continued.	
Canicaguyan (north coast)	---------
Cabulan (north coast)	0.1
Pandanon (north coast)	0.1
Masiñguil (north coast)	0.2
Jandayan (north coast)	1.7
Banacón (north coast)	1.0
Dajuntajun (north coast)	0.1
Cubijan (north coast)	0.1
Tajuntajún (north coast)	0.1
Mahanay (north coast)	2.9
Tambú (north coast)	0.4
Jildulpan (north coast)	0.1
Calituban (north coast)	0.1
Basaan (north coast)	0.1
Saae (north coast)	0.1
Talaban (north coast)	0.1
Nunu (north coast)	---------
Jao (north coast)	1.4
Cabantúan (north coast)	---------
Sagasa (north coast)	0.1
Bilangbilangan (north coast)	0.1
Jinutañgan (north coast)	0.1
Dauajon (north coast)	0.1
Gaos (north coast)	0.3
Maumauan (north coast)	0.1
Maliñgin (north coast)	---------
Macaína (north coast)	---------
Bulan (north coast)	---------
Balingui (north coast)	---------
Lapinig (northeast coast)	19.3
Lapinig Chico (northeast coast)	0.3
Tinuibo (north coast)	---------
Tintiman (east coast)	0.5
Lumittis (east coast)	0.3
Tabón (east coast)	0.1
Pamilacan (south coast)	0.4
Balicasag (east coast)	0.1
Panglao	31.1
5 unnamed islets and rocks, areas not specified, sum.	1.1
62	1,510.5
CALAMIANES ISLANDS (Paragua province):	
Busuañga	390.0
Culión	153.0
Corón	34.0
Dichílem, or Northwest	---------
Sail rock, or Vela	---------
Dimipac, or Calavite	0.6
Pinnacle rock	---------
Tanobón	0.1

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
CALAMIANES ISLANDS (Paragua province)—Continued.	
2 Colocotó rocks	.....
3 Dumunpalit	0.1
Diboyoyan	0.3
Dimaquiat	0.1
Nanga Islands:	
One island	0.4
One island	0.1
One island	.....
Apo	0.1
Menor	0.1
4 Camangá	0.1
Lágat	0.1
Bantac	1.7
Tara	3.4
Calanhayáun	0.4
Lubutglubut	.....
Island in Minangás bay	0.6
Island in Minangás bay	0.5
Cabilauan	3.5
Island south of Cabilauan	0.1
Island south of Cabilauan	0.1
Dinarán	0.5
Matayá	0.1
Dibatuc	0.1
Delián	1.2
Guintuñgauan	.....
Bulalacao	7.0
3 Malaposo	0.1
Mininlay	0.1
Calumbagan, or Calumbuyan	0.4
Canipo	1.3
Dipalían	0.5
Calipipit	.....
Dicabaíto	2.1
Ditaytayan	0.5
Guinlepen	.....
Guinlep	0.4
Tuturungan	.....
Dicalabian	.....
Cherón	.....
Malcapuyao	0.1
Piedra Blanca	.....
Dibanca	1.3
Tambón	4.9
Tampel	1.9
Dunáun	0.4
Usón (Port Usón)	3.5
Dimanglet (Port Usón)	0.1
Baquit (Port Usón)	0.8
Piñas (Port Usón)	.....
Cabilauan (Port Usón)	.....
Mayanpayan (Port Usón)	0.1
Batunan (Port Usón)	.....
Marinón (Port Usón)	.....
Cagbatan (Port Usón)	.....

ISLAND AND LOCATION.	Area in square miles.
CALAMIANES ISLANDS (Paragua province)—Continued.	
Vega (Port Usón)	.....
Pedrasa (Port Usón)	.....
Dianglit (Port Usón)	.....
Canitauan (Port Usón)	.....
East Maquínit (Port Usón)	.....
6 Maquínit	.....
Bugui (Port Corón)	0.1
Inlulucut (Port Corón)	.....
Chindonan (western channel)	2.1
Tangat (western channel)	1.8
Marily (western channel)	3.2
Luson (western channel)	0.2
Dimanglet (western channel)	0.4
Lamad (western channel)	1.7
Lajo (western channel)	1.5
Napula (western channel)	.....
Dicalatun (western channel)	.....
Calumbuyan (western channel)	.....
Dicoayan (western channel)	0.3
Island north of Dicoayan	0.3
Malcatop (western channel)	0.4
Diguilingan (western channel)	0.1
Maltolpoc (western channel)	.....
Popototan (western channel)	0.8
Mangenguey (western channel)	.....
Papachin (western channel)	.....
Malbinchilao (western channel)	0.1
Maltatayoc (western channel)	0.1
Galoc (western channel)	3.1
West Nalaut, or Green (western channel)	0.1
East Nalaut (western channel)	.....
Pamalican (western channel)	.....
Talampulan (western channel)	1.3
Malajón (western channel)	0.9
Island east of Talampulan Island	1.9

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
CALAMIANES ISLANDS (Paragua province)—Continued.	
Island east of Talampulan Island	0.1
Island east of Talampulan Island	0.1
Island east of Talampulan Island	0.1
Elet	---------
Álava (Halsey harbor)	0.6
Rhodes (Halsey harbor)	0.3
Gage (Halsey harbor)	0.1
Alligator (Halsey harbor)	0.1
Iguana (Halsey harbor)	---------
Saddle rock (Halsey harbor)	---------
61 unnamed islets and rocks, areas not specified, sum	3.5
181	642.1
CUYOS ISLANDS (Paragua province):	
Cuyo	21.0
Quinilubán group—	
One island	1.4
One island	0.6
One island	0.6
One island	0.3
One island	0.3
One island	0.1
White rock	0.1
Agutaya	4.1
Manamoc	3.1
Pamalican	0.4
León	0.1
Imaruan	0.2
Ocó	0.1
Dit	1.9
Maracañao	0.3
Matarabis	0.4
Guinlabo	0.1
Cauayan	0.1
Lubid	0.5
Pamitinan	0.4
Patuñga	0.6
Canipo	2.2
Paya	0.1
Tacbubuc	0.1
Siparay	0.1
Tagauayan	1.4
Island southeast of Tagauayan	0.8
Cocoró	0.8
Pútic	0.5
Indagamy	---------
Bararín	0.1
Bisúcay	1.7

ISLAND AND LOCATION.	Area in square miles.
CUYOS ISLANDS (Paragua province)—Continued.	
Pandán	0.1
Quiminatin	0.2
2 Quiminatin Chico	---------
Paya rock	---------
Capnoyan	1.5
Malcatop	---------
Pangatatan	---------
Silat	0.1
Imalaguan	0.3
Piedra Blanca	0.1
5 unnamed islets and rocks, areas not specified, sum	0.2
49	47.0
PARAGUA ISLAND	4,027.0
WEST COAST OF PARAGUA (Paragua province):	
3 Calitan	0.1
Diapila	0.1
Lalutaya	0.8
2 Gemelos	---------
Cauayan	0.6
Tambalanan	0.1
Cadlao	3.5
Island southwest of Cadlao	0.1
Inambúyod	0.5
Tapiutan	3.0
Matinloc	2.3
Miniloc	1.3
Paglugaban	0.1
North Guntao	0.1
South Guntao	0.2
2 Destacado rocks	---------
High rock	---------
Entalula	0.1
Popolcan	---------
Pungulasian	0.2
2 Jip rocks	---------
Guintuñgauan	---------
Comocutúan	---------
White rock	---------
Inabuyatan	0.1
Malpácao	0.1
Lagén	0.9
Pinsail	---------
Dibulúan	0.1
Ninepin, or Quille	---------
Rocky	---------
Tent, or Tienda	---------
Ragged, or Arida	---------
Saddle, or Silla	---------
Dry	---------

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
WEST COAST OF PARAGUA (Paragua province)—Continued.	
Camago	.....
9 Needle rocks, or Agujas	.....
Anato	.....
Brushwood	.....
Tuluran (Malampaya sound)	8.0
Peaked, or Pico (Malampaya sound)	.....
5 Pyramid rocks (Malampaya sound)	.....
White rock (Malampaya sound)	.....
Black rock (Malampaya sound)	.....
Entrance rock (Malampaya sound)	.....
Pillar rock (Malampaya sound)	.....
Notch (Malampaya sound)	.....
Largon rock (Malampaya sound)	.....
Largon (Malampaya sound)	.....
Cone (Malampaya sound)	.....
White rock (Malampaya sound)	.....
Pillar rock (Malampaya sound)	.....
North rock (Malampaya sound)	.....
South rock (Malampaya sound)	.....
Malapina (Malampaya sound)	.....
Tenabían (Malampaya sound)	0.3
Bay rock (Malampaya sound)	.....
Halfway (Malampaya sound)	.....
Tide rock (Malampaya sound)	.....
Taitai (Malampaya sound)	.....
Northeast bay (Malampaya sound)	0.1
Wilson (Malampaya sound)	.....
Crane (Malampaya sound)	.....
Janet (Malampaya sound)	.....
Black cliff (Malampaya sound)	0.1
White rock (Malampaya sound)	.....

ISLAND AND LOCATION.	Area in square miles.
WEST COAST OF PARAGUA (Paragua province)—Continued.	
Small Calábuctuñg (Malampaya sound)	.....
Calábuctuñg (Malampaya sound)	.....
Turung (Malampaya sound)	.....
Tacbolo (Malampaya sound)	0.1
Flemming (Malampaya sound)	.....
Cooke (Malampaya sound)	.....
Palcocotan (Malampaya sound)	.....
Eniaran (Malampaya sound)	.....
Flat rock (Malampaya sound)	.....
Passage (Malampaya sound)	0.9
Boswell (Malampaya sound)	.....
Canipo (Malampaya sound)	0.1
Ibelbel (Malampaya sound)	.....
Vinalo (Malampaya sound)	.....
Mallarois (Malampaya sound)	.....
Balolo rock (Malampaya sound)	.....
Cancea rock (Malampaya sound)	.....
Durañgan, or Guimanán (Malampaya sound)	0.1
Millman (Malampaya sound)	.....
Alligator (Malampaya sound)	0.1
White rock (Malampaya sound)	.....
Double cone (Malampaya sound)	.....
Bay rock (Malampaya sound)	.....
Calonhogón (Malampaya sound)	.....
Bartoc (Malampaya sound)	.....
White Pillar rock (Malampaya sound)	.....
Mallarotone, or Malaoton (Malampaya sound)	0.1

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
WEST COAST OF PARAGUA (Paragua province)—Continued.	
Peaked, or Agudo (Malampaya sound)	.....
Damao (Malampaya sound)	0.1
3 Central rocks (Malampaya sound)	.....
Chinicaran (Malampaya sound)	0.1
Talbaguen (Malampaya sound)	.....
White Top rock (Malampaya sound)	.....
Mangobobe (Malampaya sound)	.....
Cap rock (Malampaya sound)	.....
Bay (Malampaya sound)	.....
Cliff (Malampaya sound)	.....
Malutone (Malampaya sound)	.....
White rock (Malampaya sound)	.....
Two Brothers (Malampaya sound)	.....
Bird rock (Malampaya sound)	.....
Bay rock	.....
Anchorage	.....
Thumb rock	.....
Alligator rock	.....
Bullocks rock	.....
Cliff	.....
Black rock	.....
Wedge	.....
Imurúan (Bay Islands)	0.6
Lampinigan (Bay Islands)	.....
Rocky islet	.....
Confusion rock	0.1
Pagdanan rock	.....
Niapórai	0.1
Boayán	5.6
Lump	0.1
Saddle	.....
Betbet	.....
Capsálay	0.2
2 Double Islands	.....
Regatta	0.1
Morison	0.1
Bush	.....
Dean	.....
Cone	.....
Savage	.....
Albaguén	0.8
Endeavour	0.1

ISLAND AND LOCATION.	Area in square miles.
WEST COAST OF PARAGUA (Paragua province)—Continued.	
Wedge	.....
Cacnípa	2.0
Peaked rock	.....
Cacbolo	0.5
Catálat, or Kabalas	0.9
Isthmus rock	.....
Bay	0.1
Zoe	.....
Square	.....
Black rock (Ulugan bay)	.....
Three Peaked, or Camuñgyan (Ulugan bay)	.....
Observatory rock (Ulugan bay)	.....
Rita (Ulugan bay)	0.2
Reef islet (Ulugan bay)	.....
Taracaiwan (Ulugan bay)	.....
White rock (Ulugan bay)	.....
Dry	.....
Hen and Chickens	.....
North rock	.....
South rock	0.1
Peaked	.....
Palm	0.1
Baja-Llanura	0.2
Sirinao, or Sepulcro	0.2
Triple-cema	0.1
Nacoda	0.6
Mariquit	0.1
Maricabán	0.2
Mangle Butuan	0.1
Marantao	0.1
Malapakkun	0.4
Litá-Litá	0.1
74 unnamed islets and rocks, areas not specified, sum	2.8
262	41.0
EAST COAST OF PARAGUA (Paragua province):	
Cabuláun Islands:	
Nañgalao Islands, north island	2.1
Nañgalao Islands, west island	0.1
Nañgalao Islands, south island	0.4
Cabuláun	2.6
Canarón	0.1
Salimbubuc	.....
Solitario	.....
Linapacan (Linapacan group)	51.0

Islands of the Philippine archipelago, arranged geographically from north to south.—Con.

ISLAND AND LOCATION.	Area in square miles.
EAST COAST OF PARAGUA (Paragua province)—Continued.	
Dicapululan (Linapacan group)	0.1
Binalaba (Linapacan group)	0.6
Ditacop (Linapacan group)	.....
Pangaldauan (Linapacan group)	0.2
Bolina (Linapacan group)	.....
Ibachin (Linapacan group)	.....
Dimancal (Linapacan group)	0.1
Malbatan (Linapacan group)	.....
Alijara (Linapacan group)	0.2
Malnijat (Linapacan group)	.....
Inapupan (Linapacan group)	0.4
Dimanglet (Linapacan group)	0.2
Escucha (Linapacan group)	.....
Patoyac (Linapacan group)	0.8
4 Curianas (Linapacan group)	.....
Guintuñgauan (Linapacan group)	0.2
Malnijat (Linapacan group)	.....
Calacala (Linapacan group)	.....
Cagdanaon (Linapacan group)	0.1
Calibangbagan (Linapacan group)	2.3
Nangá (Linapacan group)	0.5
Cacayatan (Linapacan group)	0.3
Malubutglubut (Linapacan group)	1.4
Vanguardia (Linapacan group)	0.1
Alerta (Linapacan group)	.....
Cauayan (Dalañgánem Islands)	0.2
Dalañgánem (Dalañgánem Islands)	2.1
Carandagá (Dalañgánem Islands)	0.8
Casirahan (Dalañgánem Islands)	.....
Cabuli	0.9
Darocotan	0.4

ISLAND AND LOCATION.	Area in square miles.
EAST COAST OF PARAGUA (Paragua province)—Continued.	
Baluñguñgan	0.5
Dado	.....
Iloc, or Austin	5.2
Cauayanen	0.1
Binulbulan	1.3
North rock	.....
South rock	.....
Maotonon	0.2
Bagambagan	2.6
Morigue	0.1
Batás	9.1
Paloma	0.1
Broken	0.1
Malabuctún, or Giménez	3.9
Francés	0.4
Mobanen	2.5
Pinachiuyan	2.6
Casian, or Collinson	1.4
Verde, or Signal	0.1
Maytegued	18.0
Latitude	0.1
Macaitot	.....
Quimbaludan	0.1
Nabat	0.1
Talacanen	0.1
Apúlit	0.1
Ditnot	.....
Binaticán, or South Passage	1.0
Guindabdaban	.....
Quimbuluan	.....
Pabellones	0.2
Calabadián (North Taytay)	0.6
Malatpuso	0.1
Icadambanuan, or South Taytay	2.6
Black rock	.....
White rock	.....
Calabúcay	.....
Cagdanaon	0.1
Ibobor	0.1
Paly, or Barren	2.1
Monk and Friar	.....
Cabucao	0.1
Mayabacan	0.1
Capsalon	.....
North Channel	.....
Bivouac	.....
Reef	.....
Island west of Dumarán	1.0
Dumarán	122.0
Raquit	0.1
Cambary	0.1
Quimitad	0.1
Mantulary	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
EAST COAST OF PARAGUA (Paragua province)—Continued.	
Lañgoy	0.1
Hog, or Puerco	.....
Green, or Verde	0.1
Shell, or Concha	0.1
Reef, or Arrecife	.....
Flat, or Rosa	0.9
Johnson	0.1
Stanlake	0.4
Howley	0.1
Reynard	0.1
North Green	1.4
South Green	1.2
Anchorage, or Fondeado	0.9
Reef, or Arrecife	0.1
Meara	0.4
Bush	.....
Ramesamey, or Tuft	0.1
Machesi	0.1
Fraser	.....
Cana, or Harbor (Puerto Princesa)	.....
River (Puerto Princesa)	.....
Village rock (Puerto Princesa)	.....
Malanao, or Maltby	2.0
Dry	.....
Sombrero	0.1
Sand	0.1
Mantaquin, or Flat	2.9
Temple	0.1
Reef, or Arrecife	0.1
Bessie	0.4
Gardiner	0.1
Tagalinog, or East	0.1
Destacada	.....
2 Segían	.....
Pirate	0.1
Úrsula	0.1
Reef	0.1
Bowen	0.2
114 unnamed islets and rocks, areas not specified, sum	3.3
248	263.0
BALÁBAC AND ADJACENT ISLANDS (Paragua province):	
Balábac	122.0
Bugsuk	47.0
Pandanan	12.0
Bowen	0.2
Canimeran	0.1
Patongong	0.1
Apo	0.1
BALÁBAC AND ADJACENT ISLANDS (Paragua province)—Continued.	
Gabung	0.8
Byan	0.5
Malinsono	0.1
Bancalan	5.2
Mantagule	6.9
Canabuñgan	1.2
Secam	0.1
Caxisigan	0.2
Ramos	10.0
Candaraman	1.0
Sanz	0.8
Paz	0.3
Albay	0.1
Nasubata	0.1
Sand Cay	0.1
Comiran	.....
Lumbucan	0.3
Gnat Reef Cay	.....
9 unnamed islets and rocks, areas not specified, sum	0.3
34	209.5
CAGAYANES AND ADJACENT ISLANDS OF SULU SEA (Paragua province):	
Cagayán (Cagayanes Islands)	4.6
Dondonay (Cagayanes Islands)	1.3
Boomboong (Cagayanes Islands)	0.4
Cagayancillo (Cagayanes Islands)	0.2
Calusa (Cagayanes Islands)	0.3
Anuling (Cagayanes Islands)	0.1
Manucan (Cagayanes Islands)	0.3
Cavilli (Cagayanes Islands)	0.1
Arena	0.1
Tubbataha	0.6
Jessie Beazley	.....
Black rock	0.1
10 unnamed islets and rocks, areas not specified, sum	0.1
22	8.2
MINDANAO ISLAND	36,292.0

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
NORTH COAST OF MINDANAO (Misamis province):	
Camiguín	94.0
Canauayor	0.1
Bantigui	0.1
Solaton (Port Misamis)	.....
Sibaquit	0.1
Island north of Sibaquit	0.1
4 unnamed islets and rocks, areas not specified, sum	0.1
10	94.5
NORTHEAST AND EAST COASTS OF MINDANAO (Surigao province):	
Dinágat	309.0
Gibuson	3.1
2 Geminis	.....
3 Pelotes	.....
Island south of Pelotes	0.1
Cubcub	0.1
Unip	1.8
Sibanag	1.0
Licoco	.....
Viraviray	.....
Cabaquián	1.7
Tabuyaca	.....
Cabilán	.....
Danaodanauan	0.2
Sumilon	0.1
Sibale	1.0
Gipdó	3.0
Basol	.....
Island west of Maínit Lake	0.2
Island southwest of Dinágat	12.0
Island southwest of Dinágat	11.0
Rasa	0.2
Jalían	0.4
Bayatnán	2.0
Ginatúan	5.4
Cabusuan	6.2
Island southwest of Bayatnán	1.4
Island southwest of Bayatnán	0.4
Island southwest of Bayatnán	0.9
Island north of Cabusuan	0.4
Island north of Ginatúan	0.2
2 Nagúbat	.....
Cabgán	0.3
Alincacadao	0.1
Yangaba	0.1
NORTHEAST AND EAST COASTS OF MINDANAO (Surigao province)—Continued.	
Amagadpayat	.....
Bucás Grande	43.0
Bucás Middle	5.0
Bucás East	5.4
Siargao	151.0
Island west of Siargao	0.8
Island west of Siargao	2.1
Island west of Siargao	1.3
Island west of Siargao	0.5
Island west of Siargao	1.3
Island west of Siargao	1.3
Janoyoy	.....
Guyang	.....
Dacó	0.3
Casulían	0.4
Lajanosa	0.9
Anajauan	0.9
Ballena	.....
General	1.6
Ramillete	.....
Tritón	.....
Aúqui	0.3
Unamao	0.1
Macangani	1.2
Island at mouth of Tándag river	1.4
Magábao	0.8
Arangasa	2.2
Ayninan	0.3
Jobó	.....
Island off Point Banculin	0.4
Tigdós	0.4
Island west of Tigdós	0.2
Island southwest of Tigdós	0.1
Island southwest of Tigdós	0.1
Masahuron	0.1
Agonoy	0.1
57 unnamed islets and rocks, areas not specified, sum	1.8
132	587.6
SOUTHEAST COAST OF MINDANAO (Dávao district, Moro province):	
Cabúgao	0.1
Pujada	0.1
Uanivan	.....
Lubán	0.1
Balut (Sarangani Islands)	40.0
Sarangani (Sarangani Islands)	22.0

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
SOUTHEAST COAST OF MINDANAO (Dávao district, Moro province)—Continued.	
Olanivan (Sarangani Islands)	0.1
Manamil (Sarangani Islands)	0.1
Maúru (Sarangani Islands)	.....
Dumálag (Dávao gulf)	.....
Talicud (Dávao gulf)	15.0
Sámal (Dávao gulf)	147.0
2 Arboles (Dávao gulf)	.....
Cruz, north island (Dávao gulf)	0.3
Cruz, south island (Dávao gulf)	0.3
Copia (Dávao gulf)	0.4
Pandasan (Dávao gulf)	0.2
Sigáboy (Dávao gulf)	1.0
9 unnamed islets and rocks, areas not specified, sum.	0.3
28	227.0
SOUTHWEST COAST OF MINDANAO (Cottabato district, Moro province):	
Bongó	8.8
Tubotubó	.....
Donáuang	0.1
7 unnamed islets and rocks, areas not specified, sum.	0.1
10	9.0
SOUTHWEST COAST OF MINDANAO (Lanao district, Moro province):	
Ybus	0.1
SOUTHWEST COAST OF MINDANAO (Zamboanga district, Moro province):	
Santa Cruz Grande	0.8
Santa Cruz Chico	0.1
Tictauan	1.6
Balábac	0.1
Bilanbilan	0.2
Pangipuyan	0.1
Sacol	16.0
Malanipa	1.6
Malanipa Chico	.....
Sinoonuk	.....
SOUTHWEST COAST OF MINDANAO (Zamboanga district, Moro province)—Continued.	
Tulnalutan	0.4
Pitas	.....
Maalat	.....
Pañganac	.....
Molave	.....
Burutan	0.1
Boayan	0.1
Arena Blanca	0.1
Cabugan	0.3
Paton	.....
Bacuñgan	0.1
Palmabrava	0.1
4 Tagbaon	.....
Panabulan	0.1
Bulúan	0.1
Cabut	.....
Pandalusan	.....
Olutañga	91.0
Sibulan	0.1
Letayen	0.3
Muda	.....
Dacula	0.1
Baya	.....
Cherif	0.1
Dayana	0.1
Fatima	0.1
Gatas	.....
Putili	.....
Tritón	0.1
Maculay	0.1
Lunquigui	.....
Paniquían	0.1
Puan	2.0
Sagayaran	0.2
Ticalá	.....
Ticalá Chico	.....
40 unnamed islets and rocks, areas not specified, sum.	0.7
89	116.9
NORTHWEST COAST OF MINDANAO (Dapitan subdistrict, Moro province):	
Murciélagos	0.1
Sipiña	.....
Sinipay Dacó	0.3
Sinipay Diútay	.....
Naburos	0.2
Mapotao	.....
Silinog	0.4
Alicai	0.5

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
NORTHWEST COAST OF MINDANAO (Dapitan subdistrict, Moro province)—Continued.	
2 Murciélagos	.....
4 unnamed islets and rocks, areas not specified, sum.	0.1
14	1.6
BASILAN GROUP, SULU ARCHIPELAGO (Zamboanga district, Moro province):	
Basilan	478.0
Lampinigan	0.1
Matanaga	.....
Moro	.....
Kalut	0.1
Malamaui	7.3
Coco	0.2
Coco Chico	.....
Lanhil	0.5
Sibago	0.9
Kauluan	3.0
Bihintinusa	0.1
Salupin	1.4
Timbuñgan	0.2
Tapiantana	2.8
Tolon Pisa	0.2
Haluluko	0.1
Lanabuan	0.8
Bubuán	2.8
Lahatlahat	.....
Cancuman	.....
Tamuk	1.2
Langasmate, east island	0.1
Langasmate, west island	0.1
Dauan	0.1
Teipono	0.1
Govenén Grande	0.1
Govenén Chica	.....
Takela	0.8
Tengolan	0.1
Teiñga Laguit	.....
Island near west coast of Basilan	0.2
12 unnamed islets and rocks, areas not specified, sum.	0.5
44	501.8
PILAS ISLANDS, SULU ARCHIPELAGO (Zamboanga district, Moro province):	
Pilas	8.2
Teiñga	0.5
PILAS ISLANDS, SULU ARCHIPELAGO (Zamboanga district, Moro province)—Continued.	
Sangboy, north island	0.5
Sangboy, south island	0.6
Kaludlud	0.6
Dassalan	1.4
2 Batulinos	.....
Cujangan	0.4
Saloro	0.3
Siringo	.....
Tambilunay	0.1
Manangal	1.2
Palajangan	0.2
Lemondo	.....
Orell	0.1
Minis	0.2
Mamannak	0.1
Pacig Pasilan	.....
Tinutungan	.....
Tiguilabún	.....
Tagutu	.....
Mataja	0.4
Balukbaluk	2.1
Areas not specified, sum.	0.2
24	17.1
PILAS ISLANDS, SULU ARCHIPELAGO (Sulu district, Moro province):	
Salkulakit	.....
3 Lakits	.....
4	.....
SAMALES ISLANDS, SULU ARCHIPELAGO (Sulu district, Moro province):	
Tatalan	1.3
Bucutúa	4.3
Bulan	3.7
Dipolod Grande	0.1
Dipolod Chico	.....
Mamad	0.1
East Bolod	0.1
West Bolod	0.1
Tonguil	16.0
Parol	1.2
Mamanoc	0.5
Balanguingui (including Sipac)	5.8
Bunotpasil	0.1
Dawildawil	0.2
Tuncalan	.....

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
SAMALES ISLANDS, SULU ARCHIPELAGO (Sulu district, Moro province)—Continued.	
Kasindul	.....
Simisa	3.8
Bañgálao	3.0
Manúñgut	0.2
Areas not specified, sum.	0.1
19	40.6
JOLÓ GROUP, SULU ARCHIPELAGO (Sulu district, Moro province):	
Joló	326.0
Pantocunan	0.6
Kabucan	7.4
Lahatlahat	.....
Palliagan	0.1
Bubuán	2.6
Hégad	0.5
Tauitaui	.....
Minis	0.5
Pangasinán	2.2
Maroñgas	0.4
Bancuñgan	0.2
Pañganaá	.....
Gujañgan	0.5
Tulaian	0.5
Bulicutín	0.1
Kapual	8.7
Bitinan	1.7
Dong Dong	1.2
Tambulían	0.1
Pata	20.0
Island east of Pata Island	2.2
Damocan	.....
Lumbían	0.1
Patián	0.6
Teomabal	0.4
Sulade	0.6
Tulián	.....
4 unnamed islets and rocks, areas not specified, sum.	0.1
32	377.3
PANGUTÁRANG AND ADJACENT ISLANDS, SULU ARCHIPELAGO (Sulu district, Moro province):	
Pañgutárang	42.0
Panducan	9.5
Kulassun	1.6
Tubigan	0.2
Island north of Kulassun	0.1
PAÑGUTÁRANG AND ADJACENT ISLANDS, SULU ARCHIPELAGO (Sulu district, Moro province)—Continued.	
Ticul	0.2
Teomabal	2.6
Usada	2.5
Obián	4.6
Cunilán	0.5
Malicut	0.1
Basbas	0.5
Tubalubac	0.5
Sipang	0.1
God	0.1
Datu Bató	0.5
Cap	12.0
Deato Bato	0.4
Laparan	16.0
Doccan	2.6
10 Taja and Zau islets (Pearl bank)	0.2
7 Tagbabas	0.5
Dammi	4.1
Singaan	0.1
Dasaan	0.2
Island west of Dasaan	0.1
Uwaan	0.1
Billangúan	0.3
Mammanuk	0.2
2 Lahatlahat	.....
Bambannán	0.9
10 unnamed islets and rocks, areas not specified, sum.	0.8
57	104.1
TAPUL ISLANDS, SULU ARCHIPELAGO (Sulu district, Moro province):	
Bolipongpong (or Lugus)	16.0
Tapul	13.0
Gondra	.....
Taluc	1.4
Paquia	1.3
Cabiñgan	6.1
Siassi	30.0
Lapac	17.0
Tara	0.6
Taratara	.....
Tincalan	.....
Lamenusa	0.2
Punungan	0.1
Putaíñga	.....
Tutukipa	.....
Sibijandacula	0.1

Islands of the Philippine archipelago, arranged geographically from north to south—Con.

ISLAND AND LOCATION.	Area in square miles.
TAPUL ISLANDS, SULU ARCHIPELAGO (Sulu district, Moro province)—Continued.	
Sumbasumba	.....
Parañgan	0.1
Suucán	0.1
Sámal	.....
Pandugas	0.1
Linguisan	.....
Yaro	.....
Lakiktipac	.....
Tavitavi	.....
Bulitun	0.4
Pangana Paturuan	0.1
Paturuan	.....
Buliculut	0.1
Kansina	.....
Tungal	.....
Caluman	0.1
Manubol	0.4
Tutú	.....
Calán	.....
Unpul	.....
Tagtagan	0.1
Tapaán	1.6
Pandami	0.1
Sirun	0.2
3 unnamed islets and rocks, areas not specified, sum.	1.1
43	90.3
TAWI TAWI GROUP, SULU ARCHIPELAGO (Sulu district, Moro province):	
Tawi Tawi	232.0
Bubuán	3.1
Maniacolat	0.9
Maglumbá	.....
Parañgaan	.....
Babuan	.....
Cacataán	0.8
Magpeos	.....
Tagao	0.2
Kinapusan	0.4
Bintoulán	0.9
Tabawán	1.6
Nusa	0.3
Pongpong	.....
Lorán	0.5
Manoke	.....
Obián	2.6
Tancolaluan	.....
Pandanan	.....
Pomelean	.....
Tabúan	0.1
Celandat	.....

ISLAND AND LOCATION.	Area in square miles.
TAWI TAWI GROUP, SULU ARCHIPELAGO (Sulu district, Moro province)—Continued.	
Sigboye	1.8
Simaluc	1.3
Kuad Básang	0.7
Tambagaan	2.9
Basbas	2.5
Pajumajan	0.1
Pamacalan	.....
Pamagbaran	.....
Tabulunga	2.0
Daluman	0.6
Tancan	0.1
Tonkían	.....
Tubutubo	0.1
Baturrapa	0.1
Timbaunan	0.1
Taruc	1.8
Island northwest of Taruc	0.4
Island northwest of Taruc	0.2
Togal	.....
Nahuan	0.1
Pasencoan	0.2
Indagau	.....
Tampatampá	.....
Gandol	.....
Sinangbuan	.....
Tambiluanga	0.2
Sibáloc	.....
Hamahamaang	.....
Tiguñgun	3.9
Calúpag	2.1
Charuccharuc	0.1
Calúpag Chico	0.4
Baqueque	.....
Pasegan Guimbá	.....
Pasegan Sámal	.....
2 Lijatlijat rocks	.....
Bacao	.....
5 Calaítan	0.1
Sipungut	0.1
Tandubató	17.0
Pintada	0.1
Plus	0.1
Ultra	0.4
Tandubás	4.2
Sakubong	6.5
Latuán	1.7
Calva	0.1
Island north of Latuán	0.1
Mantabaún	3.4
Banaran	2.2
Taata	1.3
Island south of Taata	0.2
Island south of Taata	0.1
Panampanag	.....
8 Basibuli	0.1

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Brushwood	West coast of Paragua.
Buad	West coast of Sámar Island.
Buan	Tawi Tawi group, Sulu archipelago.
Buaya	San Juanico strait.
Bubuán	Basilan group, Sulu archipelago.
Do	Joló group, Sulu archipelago.
Do	Tawi Tawi group, Sulu archipelago.
Bucás, East	Northeast coast of Mindanao.
Bucás Grande	Do.
Bucás, Middle	Do.
Bucutúa	Samales Islands, Sulu archipelago.
Buglug	East coast of Panay.
Bugsuk	South of Paragua.
Bugtong	Adjacent to Masbate Island.
Bugui	Port Corón, Calamianes Islands.
Buguitay	Adjacent to Polillo Island.
Buhol	West coast of Sámar Island.
Buju	Adjacent to Ticao Island.
Bulalacao	Calamianes Islands.
Bulan	North coast of Bohol Island.
Do	Samales Islands, Sulu archipelago.
Buliculut	Tapul Islands, Sulu archipelago.
Bulicutin	Joló group, Sulu archipelago.
Bulitun	Tapul Islands, Sulu archipelago.
Bullocks rock	West coast of Paragua.
Bulúan	Southwest coast of Mindanao.
Bulubadián	East coast of Panay.
Bulubadiañgán	Do.
Bulubulu	Sibutu Islands.
Bunotpasil	Samales Islands, Sulu archipelago.
Buntay	West coast of Sámar Island.
Buri	East coast of Panay.
Do	West coast of Sámar Island.
Burias	East coast of Luzón.
Do	North of Masbate Island.
Burucay	North coast of Panay.
Burungburuñgan	East coast of Luzón.
Burutan	Southwest coast of Mindanao.
Bush	East coast of Paragua.
Do	West coast of Paragua.
Busín	North of Burias Island.
Busuañga	Calamianes Islands.
Butlang	North coast of Bohol Island.
Buyallao	Adjacent to Mindoro.
Byan	Adjacent to Balábac Island.
Cabahan	Adjacent to Romblón.
Cabalanan	San Juanico strait.
Cabalarian	South coast of Sámar Island.
Cabalitian	Lingayén gulf, west coast of Luzón.
Caballo	West coast of Luzón.
Cabalúa	Adjacent to Polillo Island.
Caban	West coast of Luzón.
Cabancauan	Tawi Tawi group, Sulu archipelago.
Cabantúan	North coast of Bohol Island.
Cabaquián	East coast of Mindanao.
Cabaun	North coast of Sámar Island.
Cabgán	East coast of Mindanao.
Do	North coast of Bohol Island.
Cabilán	East coast of Mindanao.
Cabilao	North coast of Bohol Island.
Cabilauan	Calamianes Islands.
Do	Port Usón, Calamianes Islands.
Cabiñgan	Tapul Islands, Sulu archipelago.
Cabra	Lubang Islands.
Cabucao	East coast of Paragua.
Cabugan	Southwest coast of Mindanao.
Cabugan Chico	East coast of Leyte.
Cabugan Grande	Do.
Cabúgao	East coast of Panay.
Do	Southeast coast of Mindanao.
Cabulagan	Sorsogón bay, southwest coast of Luzón.
Cabulan	North coast of Bohol Island.
Cabuláun	Cabuláun Islands, east coast of Paragua.
Cabuli	North coast of Paragua.
Cabungeoán	East of Polillo Island.
Cabusuan	East coast of Mindanao.
Cabut	Southwest coast of Mindanao.
Cacataán	Tawi Tawi group, Sulu archipelago.
Cacayatan	Linapacan group, north of Paragua.
Cacbolo	West coast of Paragua.
Cacnipa	Do.
Cadlao	Do.
Cagayán	Adjacent to Polillo Island.
Do	Cagayanes Islands of Sulu sea.

Islands of the Philippine archipelago alphabetically arranged, with location.

Island.	Location.
Adcalayo	East coast of Panay.
Adyagan	East coast of Masbate Island.
Agonoy	East coast of Mindanao.
Agpitan	Port Banacalan, Marinduque.
Aguada	Naranjos Islands, west coast of Sámar Island.
Agutaya	Cuyos Islands.
Agutayan	West coast of Negros.
Alabat	East coast of Luzón.
Alad	Northwest coast of Romblón.
Álava	Halsey harbor, Calamianes Islands.
Albaguén	West coast of Paragua.
Albay	Near Balábac Island.
Alerta	Linapacan group, north of Paragua.
Alibatan (2)	Adjacent to Mindoro.
Alibijaban	Southwest coast of Luzón.
Alical	Northwest coast of Mindanao.
Alijara	Linapacan group, north of Paragua.
Alincacadao	East coast of Mindanao.
Alligator	Halsey harbor, Calamianes Islands.
Do	Malampaya sound, west coast of Paragua.
Alligator rock	West coast of Paragua.
Alo	Lingayén gulf, west coast of Luzón.
Alugan	East coast of Sámar Island.
Alutayan	North coast of Panay.
Amagadpayat	East coast of Mindanao.
Amalia	East coast of Luzón.
Ambil	Lubang Islands.
Ambolón	South coast of Mindoro.
Ambugan	Northwest coast of Bohol Island.
Amoron	Port Barrera, Masbate Island.
Anaganáhao	Adjacent to Mindoro.
Anajao	East coast of Sámar Island.
Anajanan	Northeast coast of Mindanao.
Do	West coast of Negros.
Anato	West coast of Paragua.
Anauayan	Northeast coast of Panay.
Anchorage	West coast of Paragua.
Anchorage, or Fondeado.	East coast of Paragua.
Anda	Lingayén gulf, west coast of Luzón.
Andis	East coast of Sámar Island.
Andulinang	Sibutu Islands.
Anilon	Adjacent to Polillo Island.
Ánima Sola	Adjacent to Burias Island.
Antonia	East coast of Panay.
Anuling	Cagayanes Islands of Sulu sea.
Aocon (2)	West coast of Sámar Island.
Apari rock	East coast of Luzón.
Apid	West coast of Leyte Island.
Apo	Adjacent to Balábac Island.
Do	Calamianes Islands.
Do	Southeast coast of Negros.
Apúlit	Northeast coast of Paragua.
Arangasa	Northeast coast of Mindanao
Arboles (2)	Dávao gulf, southeast coast of Mindanao.
Arena	Adjacent to Burias Island.
Do	Cagayanes Islands of Sulu sea.
Arena Blanca	Southwest coast of Mindanao.
Arturito	West coast of Sámar Island.
Aslom	Adjacent to Mindoro.
Ataá	Port Banacalan, Marinduque.
Atoloyan	East coast of Luzón.
Aúqui	Northeast and east coasts of Mindanao.
Ayninan	Do.
Babuan	Tawi Tawi group, Sulu archipelago.
Babuyán	Babuyán Islands, north of Luzón.
Bacacay	East coast of Luzón.
Bacalan	San Juanico strait.
Bacán	North coast of Sámar Island.
Bacao	Tawi Tawi group, Sulu archipelago.
Baco Chico	Adjacent to Mindoro.
Bácol	San Juanico strait.
Bacós (2)	Adjacent to Mindoro.
Bacsal, east island.	West coast of Sámar Island.
Bacsal, west island.	Do.
Bacuñgan	Southwest coast of Mindanao.
Badian	West coast of Cebú.
Do	West coast of Sámar Island.
Badoc	West coast of Luzón.
Badungbadung	San Pedro bay, south coast of Sámar Island.
Bagabáboy	Port San Miguel, Ticao Island.
Bagabú	East coast of Panay.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Cangaluyan	Lingayén gulf, west coast of Luzón.
Do	Do.
Cangrejo rock	West coast of Luzón.
Canicaguyan	North coast of Bohol Island.
Canigao	West coast of Leyte Island.
Canigaran (2)	South coast of Sámar Island.
Canimeran	Adjacent to Balábac Island.
Canimó	East coast of Luzón.
Caninoan	South coast of Sámar Island.
Canipo	Calamianes Islands.
Do	Cuyos Islands.
Do	Malampaya sound, west coast of Paragua.
Canitauan	Port Usón, Calamianes Islands.
Canmamot	Canahauan Islands, west coast of Sámar Island.
Cantican	South coast of Sámar Island.
Cantón	East coast of Luzón.
Cap	Adjacent to Pañgutárang Island, Sulu archipelago.
Cap rock	Malampaya sound, west coast of Paragua.
Capitancillo	East of Cebú.
Capnoyan	Cuyos Islands.
Capon Grande	Capones Islands, west coast of Luzón.
Capsálay	West coast of Paragua.
Capsalon	East coast of Paragua.
Capul	West coast of Sámar Island.
Carabang	Southwest coast of Luzón.
Carabao	South of Tablas Island.
Do	West coast of Luzón.
Caracapan (3)	San Juanico strait.
Carandagá	Dalañgánem Islands, east coast of Paragua.
Carigno	East coast of Luzón.
Carlota	Dos Hermanas Islands, adjacent to Marinduque.
Carnasa	West coast of Leyte Island.
Carogo	Nin bay, Masbate Island.
Cascarro (3)	Adjacent to Romblón.
Casian, or Collinson.	Northeast coast of Paragua.
Casiburan	Sorsogón bay, southwest coast of Luzón.
Casirahan	Dalañgánem Islands, east coast of Paragua.
Casulian	East coast of Mindanao.
Catabunan	Adjacent to Polillo Island.
Catalaban	East coast of Sámar Island.
Catálat, or Kabalas	West coast of Paragua.
Catanaguan (2)	East coast of Luzón.
Catanduanes	Southeast coast of Luzón.
Catpatin	Port San Miguel, Ticao Island.
Catumbal	West coast of Sámar Island.
Cauayan	Cuyos Islands.
Do	Dalañgánem Islands, east coast of Paragua.
Do	West coast of Paragua.
Cauayanen	East coast of Paragua.
Cáuit	Cebú harbor.
Cavantiguianes (11)	Canahauan Islands, west coast of Sámar Island.
Cavilli	Cagayanes Islands of Sulu sea.
Caxisigan	Adjacent to Balábac Island.
Caygan	North coast of Leyte Island.
Cebú.	
Celandat	Tawi Tawi group, Sulu archipelago.
Central rocks (3)	Malampaya sound, west coast of Paragua.
Charuccharuc	Tawi Tawi group, Sulu archipelago.
Cherif	Southwest coast of Mindanao.
Cherón	Calamianes Islands.
Chindonan	Western channel, Calamianes Islands.
Chinela	North coast of Panay.
Chinicaran	Malampaya sound, west coast of Paragua.
Chocolate	Northwest of Cebú.
Cliff	Malampaya sound, west coast of Paragua.
Do	West coast of Paragua.
Coaming	North coast of Bohol Island.
Cobrador	Adjacent to Romblón.
Coco	Basilan group, Sulu archipelago.
Coco Chico	Basilan group, Sulu archipelago.
Cocoanut	North coast of Sámar Island.
Cococ	Adjacent to Polillo Island.
Cocoró	Cuyos Islands.
Colocotó rocks (2)	Calamianes Islands.
Comas	Lingayén gulf, west coast of Luzón.
Comiran	Adjacent to Balábac Island.
Comocutúan	West coast of Paragua.
Cone	Malampaya sound, west coast of Paragua.
Do	West coast of Paragua.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Bato Igangan	Tawi Tawi group, Sulu archipelago.
Batobato	Tawi Tawi group, Sulu archipelago.
Batongbaguí	Cápiz bay, north coast of Panay.
Batulinos (2)	Pilas Islands, Sulu archipelago.
Batunan	Port Usón, Calamianes Islands.
Baturrapa	Tawi Tawi group, Sulu archipelago.
Badl	South coast of Sámar Island.
Bay	Malampaya sound, west coast of Paragua.
Do	West coast of Paragua.
Bay rock	Malampaya sound, west coast of Paragua.
Do	Do.
Do	West coast of Paragua.
Baya	Southwest coast of Mindanao.
Bayang	East coast of Panay.
Bayas	Do.
Bayatnán	East coast of Mindanao.
Bennet bank	Adjacent to Masbate Island.
Bessie	East coast of Paragua.
Betbet	West coast of Paragua.
Bihintinusa	Basilan group, Sulu archipelago.
Bilanbilan	Southwest coast of Mindanao.
Bilangbilangan	North coast of Bohol Island.
Bilatan	Tawi Tawi group, Sulu archipelago.
Biliran	North coast of Leyte Island.
Billangúan	Adjacent to Pañgutárang Island, Sulu archipelago.
Binabasalan	South coast of Sámar Island.
Binaculan	Sorsogón bay, southwest coast of Luzón.
Binalaba	Linapacan group, east of Paragua.
Binalio	West coast of Sámar Island.
Binanan	East coast of Panay.
Binanotan	Naranjos Islands, west coast of Sámar Island.
Binarayan	East coast of Sámar Island.
Binaticán, or South Passage.	East coast of Paragua.
Biñgay	East coast of Luzón.
Bintoot	Cagayán Sulu Islands.
Bintoulán	Tawi Tawi group, Sulu archipelago.
Binulbulan	Northeast coast of Paragua.
Binuluañgan	East coast of Panay.
Bird rock	Malampaya sound, west coast of Paragua.
Biri	Balicuatro Islands, north coast of Sámar Island.
Bisú Bintoot	Cagayán Sulu Islands.
Bisú Bohán	Do.
Bisúcay	Cuyos Islands.
Bitad	East coast of Panay.
Bitinan	Jológroup, Sulu archipelago.
Bivouac	East coast of Paragua.
Black cliff	Malampaya sound, west coast of Paragua.
Black rock	Adjacent to Mindoro.
Do	Cagayanes Islands of Sulu sea.
Do	East coast of Paragua.
Do	Malampaya sound, west coast of Paragua.
Do	Ulugan bay, west coast of Paragua.
Do	West coast of Paragua.
Boayan	Southwest coast of Mindanao.
Do	West coast of Paragua.
Boca (3)	Adjacent to Burias Island.
Bocaboc	Northeast coast of Negros.
Bohán	Cagayán Sulu Islands.
Bohol.	
Bolina	Linapacan group, north of Paragua.
Bolipongpong, or Lugus.	Tapul Islands, Sulu archipelago.
Boloang	Canahauan Islands, west coast of Sámar Island.
Boñgao	Tawi Tawi group, Sulu archipelago.
Bongó	Southwest coast of Mindanao.
Boomboong	Cagayanes Islands of Sulu sea.
Borabo	South coast of Sámar Island.
Borobalato	Canahauan Islands, west coast of Sámar Island.
Borón	Ports Putiao and Panlatanú, southwest coast of Luzón.
Boswell	Malampaya sound, west coast of Paragua.
Botauanan	East coast of Luzón.
Botic	South coast of Sámar Island.
Bowen	Adjacent to Balábac Island.
Do	East coast of Paragua.
Broken	Do.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Brushwood	West coast of Paragua.
Buad	West coast of Sámar Island.
Buan	Tawi Tawi group, Sulu archipelago.
Buaya	San Juanico strait.
Bubuán	Basilan group, Sulu archipelago.
Do	Joló group, Sulu archipelago.
Do	Tawi Tawi group, Sulu archipelago.
Bucás, East	Northeast coast of Mindanao.
Bucás Grande	Do.
Bucás, Middle	Do.
Bucutúa	Samales Islands, Sulu archipelago.
Buglug	East coast of Panay.
Bugsuk	South of Paragua.
Bugtong	Adjacent to Masbate Island.
Bugui	Port Corón, Calamianes Islands.
Buguitay	Adjacent to Polillo Island.
Buhol	West coast of Sámar Island.
Buju	Adjacent to Ticao Island.
Bulalacao	Calamianes Islands.
Bulan	North coast of Bohol Island.
Do	Samales Islands, Sulu archipelago.
Buliculut	Tapul Islands, Sulu archipelago.
Bulicutin	Joló group, Sulu archipelago.
Bulitun	Tapul Islands, Sulu archipelago.
Bullocks rock	West coast of Paragua.
Bulúan	Southwest coast of Mindanao.
Bulubadián	East coast of Panay.
Bulubadiañgán	Do.
Bulubulu	Sibutu Islands.
Bunotpasil	Samales Islands, Sulu archipelago.
Buntay	West coast of Sámar Island.
Buri	East coast of Panay.
Do	West coast of Sámar Island.
Burias	East coast of Luzón.
Do	North of Masbate Island.
Burucay	North coast of Panay.
Burungburuñgan	East coast of Luzón.
Burutan	Southwest coast of Mindanao.
Bush	East coast of Paragua.
Do	West coast of Paragua.
Busin	North of Burias Island.
Busuañga	Calamianes Islands.
Butlang	North coast of Bohol Island.
Buyallao	Adjacent to Mindoro.
Byan	Adjacent to Balábac Island.
Cabahan	Adjacent to Romblón.
Cabalanan	San Juanico strait.
Cabalarian	South coast of Sámar Island.
Cabalitian	Lingayén gulf, west coast of Luzón.
Caballo	West coast of Luzón.
Cabalúa	Adjacent to Polillo Island.
Caban	West coast of Luzón.
Cabancauan	Tawi Tawi group, Sulu archipelago.
Cabantúan	North coast of Bohol Island.
Cabaquián	East coast of Mindanao.
Cabaun	North coast of Sámar Island.
Cabgán	East coast of Mindanao.
Do	North coast of Bohol Island.
Cabilán	East coast of Mindanao.
Cabilao	North coast of Bohol Island.
Cabilauan	Calamianes Islands.
Do	Port Usón, Calamianes Islands.
Cabiñgan	Tapul Islands, Sulu archipelago.
Cabra	Lubang Islands.
Cabucao	East coast of Paragua.
Cabugan	Southwest coast of Mindanao.
Cabugan Chico	East coast of Leyte.
Cabugan Grande	Do.
Cabúgao	East coast of Panay.
Do	Southeast coast of Mindanao.
Cabulagan	Sorsogón bay, southwest coast of Luzón.
Cabulan	North coast of Bohol Island.
Cabuláun	Cabuláun Islands, east coast of Paragua.
Cabuli	North coast of Paragua.
Cabungeoán	East of Polillo Island.
Cabusuan	East coast of Mindanao.
Cabut	Southwest coast of Mindanao.
Cacataán	Tawi Tawi group, Sulu archipelago.
Cacayatan	Linapacan group, north of Paragua.
Cacbolo	West coast of Paragua.
Cacnipa	Do.
Cadlao	Do.
Cagayán	Adjacent to Polillo Island.
Do	Cagayanes Islands of Sulu sea.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Cagayán Sulu.	
Cagayancillo	Cagayanes Islands of Sulu sea.
Cagbalete	East coast of Luzón.
Cagbalísay	Calaguas Islands, east coast of Luzón.
Cagbatan	Port Usón, Calamianes Islands.
Cagbulauan	East coast of Luzón.
Cagdanaon	East coast of Paragua.
Do	Linapacan group, north of Paragua.
Cagdullón (2)	West coast of Sámar Island.
Cagnipa	Balicuatro Islands, north coast of Sámar Island.
Cagraray	East coast of Luzón.
Cahúit	Do.
Cajayagan	North coast of Sámar Island.
Cajoagan	Do.
Calabadián	North Taytay, east coast of Paragua.
Calabazas, East	East coast of Panay.
Calabazas, West	Do.
Calabúcay	East coast of Paragua.
Calábucturíg	Malampaya sound, west coast of Paragua.
Calacala	Linapacan group, north of Paragua.
Calagnán	Northeast coast of Panay.
Calagua	Calaguas Islands, east coast of Luzón.
Calaguan	San Juanico strait.
Calaguian	Adjacent to Polillo Island.
Calaitan (5)	Tawi Tawi group, Sulu archipelago.
Calán	Tapul Islands, Sulu archipelago.
Calangaman	East of Cebú.
Calanhayáun	Calamianes Islands.
Calantás rock	East coast of Luzón.
Calapán	North coast of Sámar Island.
Calape	West coast of Bohol Island.
Calayán	Babuyán Islands, north of Luzón.
Calibangbagan	Linapacan group, north of Paragua.
Calicoan	South coast of Sámar Island.
Calintaan	East coast of Luzón.
Calipipit	Calamianes Islands.
Calitan (3)	West coast of Paragua.
Calituban	North coast of Bohol Island.
Calocot	Adjacent to Polillo Island.
Calonhogón	Malampaya sound, west coast of Paragua.
Calpay rock	Lingayén gulf, west coast of Luzón.
Caltagan	San Juanico strait.
Caluman	Tapul Islands, Sulu archipelago.
Calumbagan, or Calumbuyan.	Calamianes Islands.
Calumbuyan	Western channel, Calamianes Islands.
Calumpijan	North coast of Leyte Island.
Calúpag	Tawi Tawi group, Sulu archipelago.
Calúpag Chico	Do.
Calusa	Cagayanes Islands of Sulu sea.
Calutan	North coast of Leyte Island.
Caluya	Southeast of Mindoro.
Calva	Tawi Tawi group, Sulu archipelago.
Camago	West coast of Paragua.
Camandag	West coast of Sámar Island.
Camangá (4)	Calamianes Islands.
Camaropundan (8)	San Pedro bay, south coast of Sámar Island.
Camasoso	Nin bay, Masbate Island.
Cambarugan rock	West coast of Sámar Island.
Cambary	East coast of Paragua.
Cambidsós (2)	Canahauan Islands, west coast of Sámar Island.
Camiguin	North coast of Mindanao.
Camiguing	Babuyán Islands, north of Luzón.
Campanario	West coast of Luzón.
Cana, or Harbor	Puerto Princesa, east coast of Paragua.
Canabayón	East coast of Sámar Island.
Canabuñgan	North of Balábac Island.
Canaguallón (2)	West coast of Sámar Island.
Canaguayón	Do.
Canahauan Dacó	Canahauan Islands, west coast of Sámar Island.
Canahauan Gutiay	Do.
Cananay	San Juanico strait.
Canarón	Cabulaun Islands, east coast of Paragua.
Cañas	East coast of Panay.
Canauayor	North coast of Mindanao.
Cancea rock	Malampaya sound, west coast of Paragua.
Cancuman	Basilan group, Sulu archipelago.
Candaraman	North of Balábac Island.
Candolu	South coast of Sámar Island.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Cangaluyan	Lingayén gulf, west coast of Luzón.
Do	Do.
Cangrejo rock	West coast of Luzón.
Canicaguyan	North coast of Bohol Island.
Canigao	West coast of Leyte Island.
Canigaran (2)	South coast of Sámar Island.
Canimeran	Adjacent to Balábac Island.
Canimó	East coast of Luzón.
Caninoan	South coast of Sámar Island.
Canipo	Calamianes Islands.
Do	Cuyos Islands.
Do	Malampaya sound, west coast of Paragua.
Canitauan	Port Usón, Calamianes Islands.
Canmamot	Canahauan Islands, west coast of Sámar Island.
Cantican	South coast of Sámar Island.
Cantón	East coast of Luzón.
Cap	Adjacent to Pañgutárang Island, Sulu archipelago.
Cap rock	Malampaya sound, west coast of Paragua.
Capitancillo	East of Cebú.
Capnoyan	Cuyos Islands.
Capon Grande	Capones Islands, west coast of Luzón.
Capsálay	West coast of Paragua.
Capsalon	East coast of Paragua.
Capul	West coast of Sámar Island.
Carabang	Southwest coast of Luzón.
Carabao	South of Tablas Island.
Do	West coast of Luzón.
Caracapan (3)	San Juanico strait.
Carandagá	Dalañgánem Islands, east coast of Paragua.
Carigno	East coast of Luzón.
Carlota	Dos Hermanas Islands, adjacent to Marinduque.
Carnasa	West coast of Leyte Island.
Carogo	Nin bay, Masbate Island.
Cascarro (3)	Adjacent to Romblón.
Casian, or Collinson.	Northeast coast of Paragua.
Casiburan	Sorsogón bay, southwest coast of Luzón.
Casirahan	Dalañgánem Islands, east coast of Paragua.
Casulian	East coast of Mindanao.
Catabunan	Adjacent to Polillo Island.
Catalaban	East coast of Sámar Island.
Catálat, or Kabalas	West coast of Paragua.
Catanaguan (2)	East coast of Luzón.
Catanduanes	Southeast coast of Luzón.
Catpatin	Port San Miguel, Ticao Island.
Catumbal	West coast of Sámar Island.
Cauayan	Cuyos Islands.
Do	Dalañgánem Islands, east coast of Paragua.
Do	West coast of Paragua.
Cauayanen	East coast of Paragua.
Cáuit	Cebú harbor.
Cavantiguianes (11)	Canahauan Islands, west coast of Sámar Island.
Cavilli	Cagayanes Islands of Sulu sea.
Caxisigan	Adjacent to Balábac Island.
Caygan	North coast of Leyte Island.
Cebú.	
Celandat	Tawi Tawi group, Sulu archipelago.
Central rocks (3)	Malampaya sound, west coast of Paragua.
Charuccharuc	Tawi Tawi group, Sulu archipelago.
Cherif	Southwest coast of Mindanao.
Cherón	Calamianes Islands.
Chindonan	Western channel, Calamianes Islands.
Chinela	North coast of Panay.
Chinicaran	Malampaya sound, west coast of Paragua.
Chocolate	Northwest of Cebú.
Cliff	Malampaya sound, west coast of Paragua.
Do	West coast of Paragua.
Coaming	North coast of Bohol Island.
Cobrador	Adjacent to Romblón.
Coco	Basilan group, Sulu archipelago.
Coco Chico	Basilan group, Sulu archipelago.
Cocoanut	North coast of Sámar Island.
Cococ	Adjacent to Polillo Island.
Cocoró	Cuyos Islands.
Colocotó rocks (2)	Calamianes Islands.
Comas	Lingayén gulf, west coast of Luzón.
Comiran	Adjacent to Balábac Island.
Comocutúan	West coast of Paragua.
Cone	Malampaya sound, west coast of Paragua.
Do	West coast of Paragua.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Confusion rock	West coast of Paragua.
Cooke	Malampaya sound, west coast of Paragua.
Copia	Dávao gulf, southeast coast of Mindanao.
Corón	Calamianes Islands.
Corregidor	West coast of Luzón.
Crane	Malampaya sound, west coast of Paragua.
Cresta de Gallo	Adjacent to Romblón.
Cruz, north island.	Dávao gulf, southeast coast of Mindanao.
Cruz, south island.	Do.
Cubcub	East coast of Mindanao.
Cubijan	North coast of Bohol Island.
Cudao	Masbate Island.
Cueva	Southwest coast of Luzón.
Cujangan	Pilas Islands, Sulu archipelago.
Culajit	North coast of Leyte Island.
Culebra	East coast of Panay.
Do	West coast of Luzón.
Do	Do.
Culión	Calamianes Islands.
Cunilán	Adjacent to Pañgutárang Island, Sulu archipelago.
Curianas (4)	Linapacan group, northeast of Paragua.
Curo Coayan (3)	Libucan Islands, west coast of Sámar Island.
Cuyo	Cuyos Islands.
Dabun	San Juanico strait.
Dacó	East coast of Mindanao.
Dacula	Southwest coast of Mindanao.
Dado	East coast of Paragua.
Dajican (5) (including Tabusao).	East coast of Luzón.
Dajuntajun	North coast of Bohol Island.
Dalañgánem	Dalañgánem Islands, east coast of Paragua.
Daluman	Tawi Tawi group, Sulu archipelago.
Dalupiri	Babuyán Islands, north of Luzón.
Do	West coast of Sámar Island.
Damao	Malampaya sound, west coast of Paragua.
Damita	West coast of Sámar Island.
Dammi	Adjacent to Pañgutárang Island, Sulu archipelago.
Damocan	Joló group, Sulu archipelago.
Danaodanauan	East coast of Mindanao.
Do	West coast of Sámar Island.
Danjugan	West coast of Negros.
Daquitdaquit	Masbate Island.
Darajuay, north island.	West coast of Sámar Island.
Darajuay, south island.	Do.
Daram	Do.
Darocotan	North coast of Paragua.
Dársena	Naranjos Islands, west coast of Sámar Island.
Dasaan	Adjacent to Pañgutárang Island, Sulu archipelago.
Dassalan	Pilas Islands, Sulu archipelago.
Datu Bató	Adjacent to Pañgutárang Island, Sulu archipelago.
Dauajon	North coast of Bohol Island.
Do	West coast of Leyte Island.
Dauan	Basilan group, Sulu archipelago.
Dawildawil	Samales Islands, Sulu archipelago.
Dayana	Southwest coast of Mindanao.
Dean	West coast of Paragua.
Deato Bato	Adjacent to Pañgutárang Island, Sulu archipelago.
Dedicas rocks (4)	Babuyán Islands, north of Luzón.
Delián	Calamianes Islands.
Déquez	Batán Islands, north of Luzón.
Destacada	East coast of Paragua.
Do	West coast of Sámar Island.
Destacado rocks (2)	Northwest coast of Paragua.
Dianglit	Port Usón, Calamianes Islands.
Diapila	West coast of Paragua.
Dibanca	Calamianes Islands.
Dibatuc	Do.
Diboyoyan	Do.
Dibughán (2)	Sorsogón bay, southwest coast of Luzón.
Dibulúan	Northwest coast of Paragua.
Dicabaito	Calamianes Islands.
Dicalabian	Do.
Dicalatun	Western channel, Calamianes Islands.
Dicapululan	Linapacan group, north of Paragua.
Dichilem, or Northwest.	Calamianes Islands.
Dicoayan	Western channel, Calamianes Islands.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Diego	Batán Islands, north of Luzón.
Diguilingan	Western channel, Calamianes Islands.
Dimancal	Linapacan group, north of Paragua.
Dimanglet	Do.
Do	Port Usón, Calamianes Islands.
Do	Western channel, Calamianes Islands.
Dimaquiat	Calamianes Islands.
Dimipac, or Calavite.	Do.
Dinágat	Northeast of Mindanao.
Dinarán	Calamianes Islands.
Dio	East coast of Leyte Island.
Dipalian	Calamianes Islands.
Dipolod Chico	Samales Islands, Sulu archipelago.
Dipolod Grande	Do.
Distoring	East coast of Luzón.
Dit	Cuyos Islands.
Ditacop	Linapacan group, north of Paragua.
Ditaytayan	Calamianes Islands.
Ditnot	East coast of Paragua.
Divinubo	East coast of Sámar Island.
Doccan	Adjacent to Pañgutárang Island, Sulu archipelago.
Don Islands	One island northwest of Cebú.
	One island.
	Do.
	Do.
	Do.
	Do.
	Do.
Doña Ana (3)	Ports Putiao and Panlatúan, southwest coast of Luzón.
Donánang	Southwest coast of Mindanao.
Dondonay	Cagayanes Islands of Sulu sea.
Dong Dong	Joló group, Sulu archipelago.
Donjon	Adjacent to Mindoro.
Dos Cocos (2)	East coast of Sámar Island.
Dos Hermanos (3)	Lingayén gulf, west coast of Luzón.
Double (2)	West coast of Paragua.
Double Cone	Malampaya sound, west coast of Paragua.
Dry	East coast of Paragua.
Dry	West coast of Paragua.
Do	Do.
Dumálag	Dávao gulf, southeast coast of Mindanao.
Dumarán	East coast of Paragua.
Dumunpalit (3)	Calamianes Islands.
Dunao	East coast of Panay.
Dunáun	Calamianes Islands.
Duquio	West coast of Leyte Island.
Durañgan, or Guimanán.	Malampaya sound, west coast of Paragua.
East Bolod	Samales Islands, Sulu archipelago.
East Maquinit	Port Usón, Calamianes Islands.
East Nalaut	Western channel, Calamianes Islands.
El Fraile	West coast of Luzón.
Elefante	Adjacent to Marinduque.
Elet	Calamianes Islands.
Elonbachid	North coast of Sámar Island.
Endeavour	West coast of Paragua.
Eniaran	Malampaya sound, west coast of Paragua.
Enoruan	San Pedro bay, south coast of Sámar Island.
Entalula	West coast of Paragua.
Entrance rock	Malampaya sound, west coast of Paragua.
Escarpada	Naranjos Islands, west coast of Sámar Island.
Escucha	Linapacan group, north of Paragua.
Do	North coast of Luzón.
Estagno	East coast of Luzón.
Faltaban	Port San Miguel, Ticao Island.
Fatima	Southwest coast of Mindanao.
Flat, or Rosa	East coast of Paragua.
Flat rock	Malampaya sound, west coast of Paragua.
Flemming	Do.
Floripon	Bañgá bay, north coast of Panay.
Font	Babuyán Islands, north of Luzón.
Foot	North coast of Sámar Island.
Fortune	West coast of Luzón.
Francés	East coast of Paragua.
Fraser	Do.
Fulin	East coast of Sámar Island.
Gabung	Adjacent to Balábac Island.
Gage	Halsey harbor, Calamianes Islands.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Galoc	Western channel, Calamianes Islands.
Galvaney	Southwest coast of Luzón.
Gandol	Tawi Tawi group, Sulu archipelago.
Gaos	North coast of Bohol Island.
Gardiner	East coast of Paragua.
Garza	Adjacent to Mindoro.
Gaspar	Tres Reyes Islands, adjacent to Marinduque.
Gatas	Southwest coast of Mindanao.
Gato	Masbate Island.
Do	Northwest of Cebú.
Gaviota rock	West coast of Luzón.
Gay	East coast of Luzón.
Gayaman	Lingayén gulf, west coast of Luzón.
Gemelos (2)	West coast of Paragua.
Geminis (2)	East coast of Mindanao.
General	Do.
Genurúan	North coast of Leyte Island.
Gibitupil	Northwest of Cebú.
Gibuson	East coast of Mindanao.
Gigantañgan	West coast of Leyte Island.
Gilbert	North coast of Sámar Island.
Gilutugan	Adjacent to Masbate Island.
Ginatúan	East coast of Mindanao.
Gipdó	Do.
Gnat Reef Cay	Adjacent to Balábac Island.
God	Adjacent to Pañgutárang Island, Sulu archipelago.
Golo	Lubang Islands.
Gondra	Tapul Islands, Sulu archipelago.
Gorrión	Adjacent to Burias Island.
Govenén Chica	Basilan group, Sulu archipelago.
Govenén Grande	Do.
Gran Laja	North coast of Luzón.
Grande	West coast of Luzón.
Green	North coast of Sámar Island.
Green, or Verde	East coast of Paragua.
Guaraydajo	Sorsogón bay, southwest coast of Luzón.
Guimarás	Southeast coast of Panay.
Guinápac rocks (3)	Babuyán Islands, north of Luzón.
Guinauayan	Adjacent to Masbate Island
Guindabdaban	East coast of Paragua.
Guininyan	East coast of Luzón.
Guinlabagan	Adjacent to Masbate Island.
Guinlabo	Cuyos Islands.
Guinlep	Calamianes Islands.
Guinlepen	Do.
Guinluthagan	Adjacent to Masbate Island.
Guintacan	Northwest of Cebú.
Guintarcan, or Lintarcan.	West coast of Sámar Island.
Guintiguian	San Juanico strait.
Guintinúa	Calaguas Islands, east coast of Luzón.
Guintuñgauan	Calamianes Islands.
Do	Linapacan group, north of Paragua.
Do	West coast of Paragua.
Guiuanón	Guimarás strait, southeast coast of Panay.
Gujañgan	Joló group, Sulu archipelago.
Gumalac	West coast of Leyte Island.
Guyang	East coast of Mindanao.
Halfway	Malampaya sound, west coast of Paragua.
Haluluko	Basilan group, Sulu archipelago.
Hamahamaang	Tawi Tawi group, Sulu archipelago.
Handauan	East coast of Luzón.
Hégad	Joló group, Sulu archipelago.
Hen and Chickens	West coast of Paragua.
Hermana Mayor	West coast of Luzón.
Hermana Menor	Do.
Hermanos (2)	North coast of Luzón.
High rock	West coast of Paragua.
Higunum	East coast of Sámar Island.
Hilabaan	Do.
Hilotongan	Northwest of Cebú.
Hirapsán	North coast of Sámar Island.
Hog, or Puerco	East coast of Paragua.
Horadaba rocks (3)	Adjacent to Catanduanes Island.
Horadada rock	West coast of Luzón.
Howley	East coast of Paragua.
Hundred Islands	Lingayén gulf, west coast of Luzón.
Isgat	West coast of Luzón.
Ibachin	Linapacan group, north of Paragua.
Ibelbel	Malampaya sound, west coast of Paragua.
Ibobor	East coast of Paragua.
Ibugos	Batán Islands, north of Luzón.
Icadambanuan, or South Taytay.	Northeast coast of Paragua.
Iguana	Halsey harbor, Calamianes Islands.
Ilacon	North coast of Negros.
Iling	South coast of Mindoro.
Iloc, or Austin	Northeast coast of Paragua.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Imalaguan	Cuyos Islands.
Imaruan	Do.
Imurúan	Bay Islands, west coast of Paragua.
Inabuyatan	West coast of Paragua.
Inambúyod	Do.
Inampulugan	Guimarás strait, southeast coast of Panay.
Inapupan	Linapacan group, north of Paragua.
Inatoulan	South coast of Sámar Island.
Indagamy	Cuyos Islands.
Indagau	Tawi Tawi group, Sulu archipelago.
Ingalan	Calaguas Islands, east coast of Luzón.
Iniyao	East coast of Sámar Island.
Inlulucut	Port Corón, Calamianes Islands.
Iquicon	Adjacent to Polillo Island.
Irao	Babuyán Islands, north of Luzón.
Iriron rock	Adjacent to Mindoro.
Isabel	Dos Hermanas Islands, adjacent to Marinduque.
Isac	East coast of Sámar Island.
Isbayat	Batán Islands, north of Luzón.
Isthmus rock	West coast of Paragua.
Ivantacut	San Juanico strait.
Jalian	East coast of Mindanao.
Jamoraon	Masbate Island.
Jandayan	North coast of Bohol Island.
Janet	Malampaya sound, west coast of Paragua.
Janoyoy	East coast of Mindanao.
Jao	North coast of Bohol Island.
Jaulo	East coast of Luzón.
Jayaang	North coast of Bohol Island.
Jessie Beazley	Cagayanes Islands of Sulu sea.
Jildulpan	North coast of Bohol Island.
Jimuquitan	West coast of Leyte Island.
Jinamog	San Pedro bay, south coast of Sámar Island.
Jintotolo	Masbate Island.
Jinutañgan	North coast of Bohol Island.
Jip rocks (2)	West coast of Paragua.
Jobó	East coast of Mindanao.
Johnson	East coast of Paragua.
Joló	Joló group, Sulu archipelago.
Jomálig	Adjacent to Polillo Island.
Juac	East coast of Luzón.
Jugu	Babuyán Islands, north of Luzón.
Juraojurao	West coast of Panay.
Kabucan	Joló group, Sulu archipelago.
Kaludlud	Pilas Islands, Sulu archipelago.
Kalut	Basilan group, Sulu archipelago.
Kansina	Tapul Islands, Sulu archipelago.
Kapual	Joló group, Sulu archipelago.
Kasíndul	Samales Islands, Sulu archipelago.
Kauluan	Basilan group, Sulu archipelago.
Keenapusan	Cagayán, Sulu Islands.
Kinapusan	Tawi Tawi group, Sulu archipelago.
Kuad Básang	Do.
Kulassun	Adjacent to Pañgutárang Island, Sulu archipelago.
La Monja	West coast of Luzón.
Laá	Tawi Tawi group, Sulu archipelago.
Labnó	East coast of Panay.
Lágat	Calamianes Islands.
Lagén	West coast of Paragua.
Lagnay	North coast of Leyte Island.
Laguán	North coast of Sámar Island.
Lahatlahat (2)	Adjacent to Pañgutárang Island, Sulu archipelago.
Lahatlahat	Basilan group, Sulu archipelago.
Do	Joló group, Sulu archipelago.
Lahuán	South coast of Sámar Island.
Lahuy	East coast of Luzón.
Laja	Do.
Lajanosa	East coast of Mindanao.
Lajo	Western channel, Calamianes Islands.
Lakiktipac	Tapul Islands, Sulu archipelago.
Lakits (3)	Pilas Islands, Sulu archipelago.
Lalauigan	East coast of Sámar Island.
Lalutaya	West coast of Paragua.
Lamad	Western channel, Calamianes Islands.
Lamenusa	Tapul Islands, Sulu archipelago.
Lamiñgao	West coast of Sámar Island.
Lamit	East coast of Luzón.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Lampinigan	Basilan group, Sulu archipelago.
Do	Bay Islands, west coast of Paragua.
Lanabuan	Basilan group, Sulu archipelago.
Langasmate, east island.	Do.
Langasmate, west island.	Do.
Lañgoy	East coast of Paragua.
Lanhil	Basilan group, Sulu archipelago.
Lantao	Adjacent to Polillo Island.
Lapac	Tapul Islands, Sulu archipelago.
Laparan	Adjacent to Pañgutárang Island, Sulu archipelago.
Lapinig	Northeast coast of Bohol Island.
Lapinig Chico	Do.
Lapunlapun	Cagayán Sulu Islands.
Largon	Malampaya sound, west coast of Paragua.
Largon rock	Do.
Latitude	Northeast coast of Paragua.
Latuán	Tawi Tawi group, Sulu archipelago.
Lava	Cebú harbor.
Lavampá	Sorsogón bay, southwest coast of Luzón.
Layalaya	Libucan Islands, west coast of Sámar Island.
Lazareto	San Juanico strait.
León	Cuyos Islands.
Leleboón	South coast of Sámar Island.
Lemondo	Pilas Islands, Sulu archipelago.
Leshuec	Sorsogón bay, southwest coast of Luzón.
Letayen	Southwest coast of Mindanao.
Leyte.	
Libagao	Adjacent to Mindoro.
Libucan Dacó	Libucan Islands, west coast of Sámar Island.
Libucan Gutiay	Do.
Licoco	Northeast coast of Mindanao.
Lijatilijat rocks (2)	Tawi Tawi group, Sulu archipelago.
Limasagua	South coast of Leyte Island.
Limbancauayan	West coast of Sámar Island.
Limbones	West coast of Luzón.
Linao	East coast of Sámar Island.
Linapacan	Linapacan group, north of Paragua.
Linguisan	Tapul Islands, Sulu archipelago.
Linoa	East coast of Sámar Island.
Litá-Litá	West coast of Paragua.
Livas	North coast of Sámar Island.
Logbon	Adjacent to Romblón.
Lorán	Tawi Tawi group, Sulu archipelago.
Los Carabaos (10)	East coast of Luzón.
Los Cochinos (4)	West coast of Luzón.
Los Confites (2)	East coast of Luzón.
Los Frailes (4)	West coast of Luzón.
Lubán	Southeast coast of Mindanao.
Lubang	Lubang Islands.
Lubid	Cuyos Islands.
Lubutglubut	Calamianes Islands.
Luginut	Southeast coast of Panay.
Lumbian	Joló group, Sulu archipelago.
Lumbucan	Adjacent to Balábac Island.
Lumittis	East coast of Bohol Island.
Lump	West coast of Paragua.
Lunguipao	East coast of Luzón.
Lunquigui	Southwest coast of Mindanao.
Lupa	Tawi Tawi group, Sulu archipelago.
Luson	Western channel, Calamianes Islands.
Luzón.	
Maagpit	West coast of Bohol Island.
Maalat	Southwest coast of Mindanao.
Maasin	Adjacent to Mindoro.
Mabaay	Sapián bay, north coast of Panay.
Mabac	Babuyán Islands, north of Luzón.
Mabadis	Batán Islands, north of Luzón.
Macagiuna	Adjacent to Polillo Island.
Macaguilir	Do.
Macaina	North coast of Bohol Island.
Macaitot	East coast of Paragua.
Macalabá	West coast of Luzón.
Macalayo	East coast of Sámar Island.
Macangani	East coast of Mindanao.
Macaratu	West coast of Sámar Island.
Macarite	Balicuatro Islands, north coast of Sámar Island.
Macata	East coast of Sámar Island.
Macatul	West coast of Sámar Island.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Machesi	East coast of Paragua.
Mactán	East of Cebú.
Mactión	West coast of Sámar Island.
Maculabo	Calaguas Islands, east coast of Luzón.
Maculay	Southwest coast of Mindanao.
Madumug	Port Banacalan, Marinduque.
Maestre de Campo	Adjacent to Romblón.
Magábao	East coast of Mindanao.
Magaguilanguilan	Port Barrera, Masbate Island.
Magban	North coast of Bohol Island.
Magearagui	Masbate Island.
Magesang	Balicuatro Islands, north coast of Sámar Island.
Maggano	North coast of Sámar Island.
Maglle	East coast of Panay.
Maglumbá	Tawi Tawi group, Sulu archipelago.
Magpeos	Do.
Magtimua rock	East coast of Luzón.
Maguho	East coast of Panay.
Mahabang	Sapián bay, north coast of Panay.
Mahanay	North coast of Bohol Island.
Maiduum	East coast of Sámar Island.
Majaba	Adjacent to Masbate Island.
Do	West coast of Sámar Island.
Majabas	West coast of Leyte Island.
Majacob	West coast of Sámar Island.
Makadlao	Balicuatro Islands, north coast of Sámar Island.
Malabuctún, or Giménez.	Northeast coast of Paragua.
Malaguinoan	Adjacent to Polillo Island.
Malajibo manoc	West coast of Luzón.
Malajón	Western channel, Calamianes Islands.
Malamaui	Basilan group, Sulu archipelago.
Malamis	Adjacent to Polillo Island.
Malanao, or Maltby.	East coast of Paragua.
Malañgabang	East coast of Panay.
Malanipa	Southwest coast of Mindanao.
Malanipa Chico	Do.
Malanton	West coast of Sámar Island.
Malapakkun	West coast of Paragua.
Malapandan	West coast of Sámar Island.
Malapascua	Northwest of Cebú.
Malapina	Malampaya sound, west coast of Paragua.
Malaposo (3)	Calamianes Islands.
Malatpuso	East coast of Paragua.
Malavatúan	Lubang Islands.
Malaya	Sapián bay, north coast of Panay.
Malazimbó (2)	Sorsogón bay, southwest coast of Luzón.
Malbatan	Linapacan group, north of Paragua.
Malbinchilao	Western channel, Calamianes Islands.
Malcapuyao	Calamianes Islands.
Malcatop	Cuyos Islands.
Do	Western channel, Calamianes Islands.
Malhón	South coast of Sámar Island.
Malicaboc	North coast of Bohol Island.
Malicut	Adjacent to Pañgutárang Island, Sulu archipelago.
Maliñgin	North coast of Bohol Island.
Malinsono	Adjacent to Balábac Island.
Maliuya	East coast of Panay.
Mallarois	Malampaya sound, west coast of Paragua.
Mallarotone, or Malaoton.	Do.
Malnijat	Linapacan group, north of Paragua.
Do	Do.
Malpácao	West coast of Paragua.
Maltatayoc	Western channel, Calamianes Islands.
Maltolpoc	Do.
Malubutglubut	Linapacan group, north of Paragua.
Malumahúan	Sorsogón bay, southwest coast of Luzón.
Malutagaui	West coast of Sámar Island.
Malutone	Malampaya sound, west coast of Paragua.
Mamad	Samales Islands, Sulu archipelago.
Mamannak	Pilas Islands, Sulu archipelago.
Mamanoc	Samales Islands, Sulu archipelago.
Mammanuk	Adjacent to Pañgutárang Island, Sulu archipelago.
Manadi	Adjacent to Mindoro.
Manamil	Sarangani Islands, southeast coast of Mindanao.
Manamoc	Cuyos Islands.
Manangal	Pilas Islands, Sulu archipelago.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Mandagaran dacó	West coast of Sámar Island.
Mandagaran gutíay	Do.
Mandah	Cagayán Sulu Islands.
Mandaui	Lubang Islands.
Mandon	West coast of Sámar Island.
Mangenguey	Western channel, Calamianes Islands.
Mangle Butuan	West coast of Paragua.
Mangobobe	Malampaya sound, west coast of Paragua.
Manlacolat	Tawi Tawi group, Sulu archipelago.
Manicani	South coast of Sámar Island.
Manigonigó	East coast of Panay.
Maningning	West coast of Panay.
Manipulón	East coast of Panay.
Maniwaya	Adjacent to Marinduque.
Manlanat	Adjacent to Polillo Island.
Manoc	Lingayén gulf, west coast of Luzón.
Do	Masbate Island.
Manocmanoc (3)	West coast of Leyte Island.
Manoke	Tawi Tawi group, Sulu archipelago.
Manoke Manka	Cagayán Sulu Islands.
Do	Tawi Tawi group, Sulu archipelago.
Mantabaún	Do.
Mantacao	North coast of Bohol Island.
Mantagule	Adjacent to Balábac Island.
Mantaid	East coast of Luzón.
Mantaliñgá	North coast of Panay.
Mantaquin, or Flat	East coast of Paragua.
Mantulary	Do.
Manubol	Tapul Islands, Sulu archipelago.
Manucan	Cagayanes Islands of Sulu sea.
Manúñgut	Samales Islands, Sulu archipelago.
Maotonon	East coast of Paragua.
Mapotao	Northwest coast of Mindanao.
Maquinit (6)	Calamianes Islands.
Maracañao	Cuyos Islands.
Maralison	West coast of Panay.
Marantao	West coast of Paragua.
Marãos	Sapián bay, north coast of Panay.
Maravilla	North coast of Sámar Island.
María	West coast of Leyte Island.
Do	West coast of Sámar Island.
Maríbuboc	West coast of Sámar Island.
Maricabán	West coast of Luzón.
Maricabán	West coast of Paragua.
Marily	Western channel, Calamianes Islands.
Marinduque	Adjacent to Marinduque.
Marinón	Port Usón, Calamianes Islands.
Maripipi	North coast of Leyte Island.
Mariquit	West coast of Paragua.
Mariquitdaquit	San Pedro bay, south coast of Sámar Island.
Do	West coast of Sámar Island.
Maririg	Sorsogón bay, southwest coast of Luzón.
Maroñgas	Joló group, Sulu archipelago.
Maroporo	West coast of Sámar Island.
Masahuron	East coast of Mindanao.
Masasunguiao	West coast of Sámar Island.
Masbate	
Masiñguil	North coast of Bohol Island.
Masisiñgi	East coast of Sámar Island.
Matabao	Adjacent to Ticao Island.
Matagdac (3)	Sorsogón bay, southwest coast of Luzón.
Mataja	Pilas Islands, Sulu archipelago.
Matalin	Adjacent to Catanduanes Island.
Matalvi	West coast of Luzón.
Matanaga	Basilan group, Sulu archipelago.
Matandumaten	East coast of Luzón.
Matarabis	Cuyos Islands.
Matayá	Calamianes Islands.
Matinloc	West coast of Paragua.
Maumauan	North coast of Bohol Island.
Maúru	Sarangani Islands, southeast coast of Mindanao.
Mayabacan	East coast of Paragua.
Mayañga	West coast of Luzón.
Mayanpayan	Port Usón, Calamianes Islands.
Maytegued	Northeast coast of Paragua.
Meara	East coast of Paragua.
Medio	Adjacent to Mindoro.
Do	Naranjos Islands, west coast of Sámar Island.
Do	Port Busaiñga, Burias Island.
Melchor	Tres Reyes Islands, adjacent to Marinduque.
Menor	Calamianes Islands.
Millman	Malampaya sound, west coast of Paragua.
Minadion	East coast of Sámar Island.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Minaloa	East coast of Sámar Island.
Minalolo	Adjacent to Polillo Island.
Minaman	Do.
Minanut	East coast of Sámar Island.
Minasagau	Do.
Minasaua	Adjacent to Polillo Island.
Mindanao.	
Mindoro.	
Minigil	Adjacent to Catanduanes Island.
Miniloc	West coast of Paragua.
Mininlay	Calamianes Islands.
Minis	Joló group, Sulu archipelago.
Do	Pilas Islands, Sulu archipelago.
Minoro	East coast of Luzón.
Mobanen	East coast of Paragua.
Molave	Southwest coast of Mindanao.
Mongpong	Adjacent to Marinduque.
Monk and Friar	East coast of Paragua.
Morigue	Do.
Morison	West coast of Paragua.
Moro	Basilan group, Sulu archipelago.
Moroporo	West coast of Sámar Island.
Muda	Southwest coast of Mindanao.
Muligi, north island.	Cagayán Sulu Islands.
Muligi, south island.	Do.
Murciélagos	Northwest coast of Mindanao.
Murciélagos (2)	Do.
Nababuy	San Juanico strait.
Nabat	East coast of Paragua.
Nabugtú	Adjacent to Masbate Island.
Nabugtut	Do.
Nabunut	East coast of Panay.
Naburos	Northwest coast of Mindanao.
Naburul	East coast of Panay.
Naborot	Do.
Nacoda	West coast of Paragua.
Nadúlao	Guimarás strait, southeast coast of Panay.
Nagarao	Adjacent to Masbate Island.
Do	Guimarás strait, southeast coast of Panay.
Nagnasa	North coast of Sámar Island.
Nagtig	North coast of Panay.
Nagúbat	Adjacent to Mindoro.
Nagúbat (2)	East coast of Mindanao.
Naguran	Adjacent to Masbate Island.
Nahuan	Tawi Tawi group, Sulu archipelago.
Nalibas	Guimarás strait, southeast coast of Panay.
Nalungá	Do.
Namatian	Adjacent to Masbate Island.
Nangá	Linapacan group, north of Paragua.
Nanga Islands (1 island).	Calamianes Islands.
Do	Do.
Do	Do.
Nañgalao Islands, north island.	Cabuláun Islands, east coast of Paragua.
Nañgalao Islands, south island.	Do.
Nañgalao Islands, west island.	Do.
Napayauan	Adjacent to Masbate Island.
Napula	Western channel, Calamianes Islands.
Naro Chico	Adjacent to Masbate Island.
Naro Grande	Do.
Narra	Lingayén gulf, west coast of Luzón.
Nasiducang	East coast of Panay.
Nasubata	Adjacent to Balábac Island.
Natimbunan	Adjacent to Masbate Island.
Natuntugan	East coast of Sámar Island.
Náuay	Guimarás strait, southeast coast of Panay.
Navahay	San Juanico strait.
Needle rocks, or Agujas (9).	West coast of Paragua.
Negros.	
Niapórai	West coast of Paragua.
Ninepin, or Quille	Do.
Nogas	West and south coasts of Panay.
North	Batán Islands, north of Luzón.
North Bais or Polodiot.	East coast of Negros.
North channel	East coast of Paragua.
North Gigante	Gigantes Islands, northeast coast of Panay.
North Green	East coast of Paragua.
North Guntao	West coast of Paragua.
North rock	Malampaya sound, west coast of Paragua.
Do	Northeast of Paragua.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
North rock	West coast of Paragua.
Northeast bay	Malampaya sound, west coast of Paragua.
Notch	Malampaya sound, west coast of Paragua.
Numing	West coast of Sámar Island.
Nunu	North coast of Bohol Island.
Nusa	Tawi Tawi group, Sulu archipelago.
Nusa Lajit	Do.
Nusa Tacbú	Do.
Obián	Adjacent to Pañgutárang Island, Sulu archipelago.
Do	Tawi Tawi group, Sulu archipelago.
Observatory rock	Ulugan bay, west coast of Paragua.
Oció	Cuyos Islands.
Olango	East of Cebú.
Olanivan	Sarangani Islands, southeast coast of Mindanao.
Olutañga	Southwest coast of Mindanao.
Omapui	Sibutu Islands.
Onás	South coast of Sámar Island.
Orell	Pilas Islands, Sulu archipelago.
Pabellones	East coast of Paragua.
Pacig Pasilan	Pilas Islands, Sulu archipelago.
Pagbilao Chico	Southwest coast of Luzón.
Pagbilao Grande	Do.
Pagdanan rock	West coast of Paragua.
Paglugaban	Do.
Pajumajan	Tawi Tawi group, Sulu archipelago.
Palad bank	Southwest coast of Luzón.
Palajangan	Pilas Islands, Sulu archipelago.
Palasan	East of Polillo Island.
Palaui	North coast of Luzón.
Palcocotan	Malampaya sound, west coast of Paragua.
Palijon	North coast of Sámar Island.
Palliagan	Joló group, Sulu archipelago.
Palm	West coast of Paragua.
Palmabrava	Southwest coast of Mindanao.
Paloma	East coast of Paragua.
Palompon islets (3)	East coast of Luzón.
Palumbanes (4)	Adjacent to Catanduanes Island.
Palupari	East coast of Luzón.
Paly, or Barren	Northeast coast of Paragua.
Pamacalan	Tawi Tawi group, Sulu archipelago.
Pamagbaran	Do.
Pamalican	Cuyos Islands.
Do	Western channel, Calamianes Islands.
Pamilacan	South coast of Bohol Island.
Pamitinan	Cuyos Islands.
Pamontalan	Port Barrera, Masbate Island.
Pampanga rocks	Southeast coast of Negros.
Pan de Azúcar	Babuyán Islands, north of Luzón.
Do	Northeast coast of Panay.
Panabulan	Southwest coast of Mindanao.
Panacalan	Lingayén gulf, west coast of Luzón.
Panagatan	Adjacent to Mindoro.
Panampanag	Tawi Tawi group, Sulu archipelago.
Panaón	South coast of Leyte Island.
Panay.	
Do	Adjacent to Catanduanes Island.
Pandalusan	Southwest coast of Mindanao.
Pandami	Tapul Islands, Sulu archipelago.
Pandán	Bañgá bay, north coast of Panay.
Do	Cuyos Islands.
Pandán (2)	Adjacent to Mindoro.
Pandanan	North of Balábac Island.
Do	Tawi Tawi group, Sulu archipelago.
Pandanon	North coast of Bohol Island.
Pandasan	Dávao gulf, southeast coast of Mindanao.
Panducan	Adjacent to Pañgutárang Island, Sulu archipelago.
Pandugas	Tapul Island, Sulu archipelago.
Pañgalancalañgan	East coast of Panay.
Pangaldauan	Linapacan group, north of Paragua.
Pangana Paturuan	Tapul Islands, Sulu archipelago.
Pañganaá	Joló group, Sulu archipelago.
Pañganac	Southwest coast of Mindanao.
Pangapasan	Port Banacalan, Marinduque.
Pangasinán	Joló group, Sulu archipelago.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Pangatatan	Cuyos Islands.
Pangdan	Adjacent to Polillo Island.
Pangipuyan	Southwest coast of Mindanao.
Panglao	Bohol Island.
Panguan	Sibutu Islands.
Pañgutárang.	
Paniqui	East coast of Luzón.
Paniquian	Adjacent to Mindoro.
Do	Southwest coast of Mindanao.
Panituan (3)	West coast of Sámar Island.
Pantanio	San Juanico strait.
Pantocunan	Joló group, Sulu archipelago.
Panubulon	Guimarás strait, southeast coast of Panay.
Panuitan	Babuyanes Islands, north of Luzón.
Panurayan	Sorsogón bay, southwest coast of Luzón.
Papachin	Western channel, Calamianes Islands.
Papahag	Tawi Tawi group, Sulu archipelago.
Paquia	Tapul Islands, Sulu archipelago.
Paquita	East coast of Luzón.
Paragua.	
Parañgaan	Tawi Tawi group, Sulu archipelago.
Parañgan	Tapul Islands, Sulu archipelago.
Parasan	West coast of Sámar Island.
Parol	Samales Islands, Sulu archipelago.
Pasegan Guimbá	Tawi Tawi group, Sulu archipelago.
Pasegan Sámal	Do.
Pasencoan	Do.
Pásig	East coast of Sámar Island.
Pasijan	Camotes Islands.
Passage	Malampaya sound, west coast of Paragua.
Pata	Joló group, Sulu archipelago.
Patayan	Southwest coast of Luzón.
Patián	Joló group, Sulu archipelago.
Patnanoñgan	Adjacent to Polillo Island.
Paton	Southwest coast of Mindanao.
Patongong	Adjacent to Balábac Island.
Patoyac	Linapacan group, north of Paragua.
Patuñga	Cuyos Islands.
Paturuan	Tapul Islands, Sulu archipelago.
Paya	Cuyos Islands.
Paya rock	Do.
Paz	Adjacent to Balábac Island.
Peaked	West coast of Paragua.
Peaked, or Agudo.	Malampaya sound, west coast of Paragua.
Peaked, or Pico	Do.
Peaked rock	West coast of Paragua.
Pedrasa	Port Usón, Calamianes Islands.
Pelada rock	East coast of Leyte Island.
Pelotes (3)	East coast of Mindanao.
Pepitas rocks	East coast of Panay.
Pequeña	West coast of Luzón.
Pescador	West of Cebú.
Piedra Blanca	Calamianes Islands.
Do	Cuyos Islands.
Pilar	West coast of Sámar Island.
Pilas	Pilas Islands, Sulu archipelago.
Pillar rock	Malampaya sound, west coast of Paragua.
Do	Do.
Piña	Adjacent to Masbate Island.
Pinachiuyan	Northeast coast of Paragua.
Pinacuapan	Calaguas Islands, east coast of Luzón.
Piñas	Port Usón, Calamianes Islands.
Pingit	West coast of Luzón.
Pinnacle rock	Calamianes Islands.
Pinsail	West coast of Paragua.
Pintada	Tawi Tawi group, Sulu archipelago.
Pirate	East coast of Paragua.
Pitas	Southwest coast of Mindanao.
Pitogo	East coast of Luzón.
Plus	Tawi Tawi group, Sulu archipelago.
Pobre	Adjacent to Masbate Island.
Poldoc	Ports Putiao and Panlatúan, southwest coast of Luzón.
Polillo.	
Pomelean	Tawi Tawi group, Sulu archipelago.
Pomelikan	Cagayán Sulu Islands.
Pongpong	Tawi Tawi group, Sulu archipelago.
Popolcan	West coast of Paragua.
Popototan	Western channel, Calamianes Islands.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Poro	Camotes Islands.
Do	North coast Leyte Island.
Do	West coast of Sámar Island.
Porong	East coast of Luzón.
Posón	Camotes Islands.
Puan	Southwest coast of Mindanao.
Pugpucanan	East coast of Sámar Island.
Pujada	Southeast coast of Mindanao.
Pulomonti rocks (2)	West coast of Luzón.
Pulupantao	East coast of Panay.
Punahúan	Ports Putiao and Panlatúan, southwest coast of Luzón.
Pungulasian	West coast of Paragua.
Punubulon	San Pedro bay, south coast of Sámar Island.
Punungan	Tapul Islands, Sulu archipelago.
Pupu	East of Cebú.
Puro	Ports Putiao and Panlatúan, southwest coast of Luzón.
Puro (3)	Port San Miguel, Ticao Island.
Putairīga	Tapul Islands, Sulu archipelago.
Pútic	Cuyos Islands.
Putili	Southwest coast of Mindanao.
Pyramid rocks (5)	Malampaya sound, west coast of Paragua.
Quimbaludan	East coast of Paragua.
Quimbuluan	Do.
Quiminatin	Cuyos Islands.
Quiminatin Chico (2)	Do.
Quimitad	East coast of Paragua.
Quinabugan	East coast of Luzón.
Quinalasag	Do.
Quinalugan	Do.
Quinamanucá	Do.
Quindoc	West coast of Sámar Island.
Quinilubán group	One island, Cuyos Islands.
	Do.
	Do.
	Do.
	Do.
	Do.
Ragalumbi	East coast of Panay.
Ragged, or Arida	West coast of Paragua.
Ramesamey, or Tuft.	East coast of Paragua.
Ramillete	East coast of Mindanao.
Ramos	North of Balábac Island.
Rapurapu	East coast of Luzón.
Raquit	East coast of Paragua.
Rasa	East coast of Mindanao.
Do	Naranjos Islands, west coast of Sámar Island.
Raso	San Pedro bay, south coast of Sámar Island.
Ratón	South coast of Sámar Island.
Do	West coast of Luzón.
Redondo	San Juanico strait.
Reef	East coast of Paragua.
Reef	Do.
Reef islet	Ulugan bay, west coast of Paragua.
Reef, or Arrecife	East coast of Paragua.
Do	Do.
Do	Do.
Refugio	Southwest coast of Luzón.
Refugio, or Sipanay	East coast of Negros.
Regatta	West coast of Paragua.
Reynard	East coast of Paragua.
Rhodes	Halsey harbor, Calamianes Islands.
Rita	Ulugan bay, west coast of Paragua.
River	Puerto Princesa, east coast of Paragua.
Rocky	West coast of Paragua.
Rocky islet	Do.
Romblón.	
Roña	North coast of Luzón.
Rosa	East coast of Luzón.
Rosa islets (2)	Do.
Saac	North coast of Bohol Island.
Sablayán	Sorsogón bay, southwest coast of Luzón.
Saboón	Southwest coast of Luzón.
Sacol	Southwest coast of Mindanao.
Saddle	West coast of Paragua.
Saddle, or Silla	West coast of Paragua.
Saddle rock	Halsey harbor, Calamianes Islands.
Sagasa	North coast of Bohol Island.
Sagayaran	Southwest coast of Mindanao.
Sail rock, or Vela	Calamianes Islands.
Sakubong	Tawi Tawi group, Sulu archipelago.
Salimbubuc	Cabulián Islands, east coast of Paragua.
Salkulakit	Pilas Islands, Sulu archipelago.
Sálog	East coast of Panay.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Salomague	West coast of Luzón.
Saloro	Pilas Islands, Sulu archipelago.
Salupin	Basilan group, Sulu archipelago.
Salvaria	Port Banacalan, Marinduque.
Sámal	Dávao gulf, southeast coast of Mindanao.
Do	Tapul Islands, Sulu archipelago.
Sámar.	
Sambabúas (3)	North coast of Leyte Island.
Samur	Calaguas Islands, east coast of Luzón.
San Andrés (2)	Adjacent to Marinduque.
Do	Naranjos Islands, west coast of Sámar Island.
Do	Southwest coast of Luzón.
San Bernardino Islands.	East coast of Luzón.
San Juan	North coast of Sámar Island.
Do	Southwest coast of Luzón.
San Miguel	East coast of Luzón.
Do	Do.
Do	Port San Miguel, Ticao Island.
San Salvador	West coast of Luzón.
San Vicente	North coast of Luzón.
Sand	East coast of Panay.
Do	Southeast coast of Paragua.
Sand Cay	Adjacent to Balábac Island.
Sandingan	North coast of Bohol Island.
Sañgá Sañgá	Tawi Tawi group, Sulu archipelago.
Sangboy, north island.	Pilas Islands, Sulu archipelago.
Sangboy, south island.	Do.
Sanguislapó	Tawi Tawi group, Sulu archipelago.
Santa Amalia rock.	West coast of Luzón.
Santa Cruz	Adjacent to Marinduque.
Santa Cruz Chico	Southwest coast of Mindanao.
Santa Cruz Grande.	Do.
Santa Rita	San Juanico strait.
Santiago	Lingayén gulf, west coast of Luzón.
Sanz	Adjacent to Balábac Island.
Saptán	Batán Islands, north of Luzón.
Sarangani	Sarangani Islands, southeast coast of Mindanao.
Savage	West coast of Paragua.
Secam	Adjacent to Balábac Island.
Seco	Adjacent to Panay.
Segian (2)	Southeast coast of Paragua.
Semirara	Adjacent to Mindoro.
Shell, or Concha	East coast of Paragua.
Siapa	Calaguas Islands, east coast of Luzón.
Siargao	Northeast coast of Mindanao.
Siassi	Tapul Islands, Sulu archipelago.
Siayan	Batán Islands, north of Luzón.
Sibago	Basilan group, Sulu archipelago.
Sibale	East coast of Mindanao.
Sibáloc	Tawi Tawi group, Sulu archipelago.
Sibanag	East coast of Mindanao.
Sibaquit	North coast of Mindanao.
Sibatón	Adjacent to Mindoro.
Sibauan (6)	East coast of Luzón.
Sibay	South of Mindoro.
Sibijandacula	Tapul Islands, Sulu archipelago.
Sibolon	Adjacent to Mindoro.
Sibugay	West coast of Sámar Island.
Sibulan	Southwest coast of Mindanao.
Sibutu	Sibutu Islands.
Sibuyán	Adjacent to Romblón.
Sicogon	Northeast coast of Panay.
Siete Pecados (7)	Do.
Sigáboy	Dávao gulf, southeast coast of Mindanao.
Sigboye	Tawi Tawi group, Sulu archipelago.
Silanguin	West coast of Luzón.
Silaquí	Lingayén gulf, west coast of Luzón.
Silat	Adjacent to Mindoro.
Do	Cuyos Islands.
Silinog	Northwest coast of Mindanao.
Silonay	Adjacent to Mindoro.
Siluag	Sibutu Islands.
Simalac Dacula	Tawi Tawi group, Sulu archipelago.
Simalac Sibisibi	Do.
Simaluc	Do.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Simara	Adjacent to Romblón.
Simisa	Samales Islands, Sulu archipelago.
Simonor	Tawi Tawi group, Sulu archipelago.
Sinangbuan	Do.
Singaan	Adjacent to Pañgutárang Island, Sulu archipelago.
Sinipay Dacó	Northwest coast of Mindanao.
Sinipay Diútay	Do.
Sinobughan	North coast of Sámar Island.
Sinoonuk	Southwest coast of Mindanao.
Sipalun	Southwest coast of Luzón.
Sipang	Adjacent to Pañgutárang Island, Sulu archipelago.
Sipankot	Sibutu Islands.
Siparay	Cuyos Islands.
Sipayoc	Tawi Tawi group, Sulu archipelago.
Sipiña	Northwest coast of Mindanao.
Sipungut	Tawi Tawi group, Sulu archipelago.
Siquijor	Southeast coast of Negros.
Sirinao, or Sepulcro.	West coast of Paragua.
Siringo	Pilas Islands, Sulu archipelago.
Siruma	East coast of Luzón.
Sirun	Tapul Islands, Sulu archipelago.
Sitsitoan	North coast of Bohol Island.
Small Calabuctung	Malampaya sound, west coast of Paragua.
Soguicay	Adjacent to Mindoro.
Sojotón	West coast of Sámar Island.
Solaton	Port Misamis, north coast of Mindanao.
Solitario	Cabuláun Islands, east coast of Paragua.
Do	Southwest coast of Luzón.
Solop	West coast of Sámar Island.
Sombrero (2)	Adjacent to Burias Island.
Sombrero	East coast of Panay.
Do	Northeast coast of Paragua.
Do	West coast of Luzón.
Sombrero rock	Adjacent to Panay.
South Bais or Polodacut.	East coast of Negros.
South Gigante	Gigantes Islands, northeast coast of Panay.
South Green	East coast of Paragua.
South Guntao	West coast of Paragua.
South rock	Malampaya sound, west coast of Paragua.
Do	Northeast of Paragua.
Do	West coast of Paragua.
Square	Do.
Stanlake	East coast of Paragua.
Sulade	Joló group, Sulu archipelago.
Sulóan	South coast of Sámar Island.
Sumbastumba	Tapul Islands, Sulu archipelago.
Sumilon	East coast of Mindanao.
Do	East of Cebú.
Susan	Guimarás strait, southeast coast of Panay.
Suncán	Tapul Islands, Sulu archipelago.
Suyac	North coast of Negros.
Taata	Tawi Tawi group, Sulu archipelago.
Tabawán	Do.
Tablas	West of Romblón.
Taboc	West coast of Leyte Island.
Tabón	Bañgá bay, north coast of Panay.
Do	East coast of Bohol Island.
Tabones (2)	West coast of Luzón.
Tabúan	Tawi Tawi group, Sulu archipelago.
Tabugun	East coast of Panay.
Tabulunga	Tawi Tawi group, Sulu archipelago.
Tabuyaca	East coast of Mindanao.
Tacbolo	Malampaya sound, west coast of Paragua.
Tacbubuc	Cuyos Islands.
Tagalinog, or East.	East coast of Paragua.
Tagampul	North coast of Leyte Island.
Tagao	Tawi Tawi group, Sulu archipelago.
Tagaporo	Lingayén gulf, west coast of Luzón.
Tagapulan	West coast of Sámar Island.
Tagauayan	Cuyos Islands.
Tagbabas (7)	Adjacent to Pañgutárang Island, Sulu archipelago.
Tagbaon (4)	Southwest coast of Mindanao.
Tagdaranas, north island.	West coast of Sámar Island.
Tagdaranas, south island.	Do.
Tagil	East coast of Panay.
Tagtagan	Tapul Islands, Sulu archipelago.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.
Tenabian	Malampaya sound, west coast of Paragua.
Tengolan	Basilan group, Sulu archipelago.
Tent, or Tienda	West coast of Paragua.
Teolong	Adjacent to Polillo Island.
Teomabal	Adjacent to Pañgutárang Island, Sulu archipelago.
Do	Joló group, Sulu archipelago.
Three Peaked, or Camuñgyan.	Ulugan bay, west coast of Paragua.
Thumb rock	West coast of Paragua.
Thurston rock	East coast of Luzón.
Ticalá	Southwest coast of Mindanao.
Ticalá Chico	Do.
Ticao	Northeast of Masbate Island.
Ticlin	East coast of Luzón.
Tictauan	Southwest coast of Mindanao.
Ticul	Adjacent to Pañgutárang Island, Sulu archipelago.
Tide rock	Malampaya sound, west coast of Paragua.
Tigdós	East coast of Mindanao.
Tiguilabún	Pilas Islands, Sulu archipelago.
Tiguñgun	Tawi Tawi group, Sulu archipelago.
Tijiji islets (15)	Do.
Timbaunan	Do.
Timbuñgan	Basilan group, Sulu archipelago.
Timpasan	Canahauan Islands, west coast of Sámar Island.
Tinacos	Sorsogón bay, southwest coast of Luzón.
Tinagá	Calaguas Islands, east coast of Luzón
Tinagta	Tawi Tawi group, Sulu archipelago.
Tinalisayan (4)	Adjacent to Burias Island.
Tinang	Adjacent to Romblón.
Tiñau	Balicuatro Islands, north coast of Sámar Island.
Tincalan	Tapul Islands, Sulu archipelago.
Tincansan	North coast of Leyte Island.
Tintiman	East coast of Bohol Island.
Tinuibo	North coast of Bohol Island.
Tinutungan	Pilas Islands, Sulu archipelago.
Togal	Tawi Tawi group, Sulu archipelago.
Tolon Pisa	Basilan group, Sulu archipelago.
Tomasa	North coast of Leyte Island.
Do	West coast of Sámar Island.
Tonguil	Samales Islands, Sulu archipelago.
Tonkian	Tawi Tawi group, Sulu archipelago.
Torre	San Juanico strait.
Triple-cema	West coast of Paragua.
Tritón	East coast of Mindanao.
Do	Southwest coast of Mindanao.
Tuat	North coast of Panay.
Tubábao	South coast of Sámar Island.
Tubabat	East coast of Sámar Island.
Tubalubac	Adjacent to Pañgutárang Island, Sulu archipelago.
Tubbataha	Cagayanes Islands of Sulu sea.
Tubigan	Adjacent to Pañgutárang Island, Sulu archipelago.
Tubotubó	Southwest coast of Mindanao.
Tubutubo	Manila bay, west coast of Luzón.
Do	Tawi Tawi group, Sulu archipelago.
Tujud	Adjacent to Mindoro.
Tulaian	Joló group, Sulu archipelago.
Tulián	Do.
Tulnalutan	Southwest coast of Mindanao.
Tulunanáun	East coast of Panay.
Tuluran	Malampaya sound, west coast of Paragua.
Tumaguin	East coast of Panay.
Tumalaytay	Adjacent to Masbate Island.
Tumalaytay (2)	Sorsogón bay, southwest coast of Luzón.
Tuncalan	Samales Islands, Sulu archipelago.
Tungal	Tapul Islands, Sulu archipelago.
Turung	Malampaya sound, west coast of Paragua.
Tusang Bongao	Tawi Tawi group, Sulu archipelago.
Tutú	Tapul Islands, Sulu archipelago.
Tutukipa	Do.
Tuturungan	Calamianes Islands.
Two Brothers	Malampaya sound, west coast of Paragua.
Uacuac	West coast of Sámar Island.
Uaidajon	Gigantes Islands, northeast coast of Panay.

Islands of the Philippine archipelago alphabetically arranged, with location—Continued.

Island.	Location.	Island.	Location.
Uanivan	Southeast coast of Mindanao.	West Nalaut, or Green.	Western channel, Calamianes Islands.
Ugamut	North coast of Sámar Island.	White Pillar rock	Malampaya sound, west coast of Paragua.
Uguis	East coast of Sámar Island.	White rock	Cuyos Islands.
Ultra	Tawi Tawi group, Sulu archipelago.	Do	Malampaya sound, west coast of Paragua.
Unamao	East coast of Mindanao.	Do	Do.
Unip	Do.	Do	Do.
Unisan (3)	Guimarás strait, southeast coast of Panay.	Do	Do.
Unpul	Tapul Islands, Sulu archipelago.	Do	South coast of Paragua.
Úrsula	South coast of Paragua.	Do	Ulugan bay, west coast of Paragua.
Usada	Adjacent to Pañgutárang Island, Sulu archipelago.	Do	West coast of Paragua.
Usón	Port Usón, Calamianes Islands.	White rock	Malampaya sound, west coast of Paragua.
Do	San Juanico strait.	White Top rock	Do.
Uwaan	Adjacent to Pañgutárang Island, Sulu archipelago.	Wilson	Do.
Vanguardia	Linapacan group, north of Paragua.	Wooded Islands (4)	Sibutu Islands.
Vega	Port Usón, Calamianes Islands.	Wyllie rocks (5)	Babuyán Islands, north of Luzón.
Verde	West coast of Luzón.	Y'Ami	Batán Islands, north of Luzón.
Verde, or Signal	East coast of Paragua.	Yangaba	East coast of Mindanao.
Village rock	Puerto Princesa, east coast of Paragua.	Yaro	Tapul Islands, Sulu archipelago.
Vinalo	Malampaya sound, west coast of Paragua.	Ybus	Southwest coast of Mindanao.
Viraviray	East coast of Mindanao	Yeso	Port San Miguel, Ticao Island.
Wedge	West coast of Paragua.	Yuanoan	North coast of Bohol Island.
Do	Do.	Zapato Mayor	North coast of Panay.
West Bolod	Samales Islands, Sulu archipelago.	Zapato Menor	Do.
		Zoe	West coast of Paragua.

HISTORY.

I. DISCOVERY AND PROGRESS.

Settlement and Early History—Immigration of Chinese—Later History—Slavery—Local Government—Power of the Monastic Orders—Commerce and Revenues—Government—Emancipation from Spain.

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It is not an easy task to write a brief historical review of the Philippine Islands, when the object of the author is to give a truthful account of the principal historical events in the development of the economic, social, and political life of the country. The histories published in former times do not contain historical data relating to the Filipino people, but are more in the nature of chronicles of the religious orders and statements of the doings of the governors of the archipelago. The more modern histories have not been prepared in an impartial spirit. The object of their publication appears to have been to glorify the Spanish system of colonization, and no attempt was made to present the facts. On the contrary, there was a tendency persistently to cover up the truth if its publication, in the opinion of the author, might hurt the self-love of the Spanish nation or detract in any degree from the prestige which the mother country should possess in these regions.

In order, therefore, to write a historical review the author must necessarily expand his field of investigation beyond the scope of books called "histories," and should consult the entire Philippine bibliography in order to understand past events and their latent influence on the present life of the people.

The Philippine Islands were discovered in 1521 by Fernando de Magallanes (Ferdinand Magellan). This famous Portuguese navigator had been in the service of his King in Malacca, and it was there that he heard of the situation of the Spice Islands, which at that time were being exploited by the Portuguese. Upon his return to Portugal, Magellan was not well received by his sovereign, and thereupon decided to offer his services to the King of Spain.

Pope Alexander VI, in order to avoid disputes and difficulties between Spain and Portugal, had divided the world into two equal parts and had given to Portugal that half which lay to the east of a meridian, which he fixed 370 leagues to the west of the Cape Verde Islands, and to

Spain he gave the half lying to the west of said meridian. Magellan insisted that the Molucca Islands were situated in the Spanish hemisphere, and offered to Charles V, then reigning in Spain, to reach those islands by the western route, the course at that time traveled by the Portuguese being around the Cape of Good Hope.

The Emperor ordered that a squadron be fitted out for service. Magellan was placed in command, and sailed from Seville on August 10, 1519. His voyage was full of adventures. He discovered the straits to which his name was given, crossed the Pacific ocean in the direction in which he knew the Molucca Islands were situated, and discovered the Philippine archipelago. On March 16, 1521, he arrived at the island of Homonhón, near Surigao, and touched at the island of Limasagua;[1] he discovered the island of Leyte and other small islands which lay near his route and continued on to Cebú. He was killed in Mactán, having taken up arms against the king of that small island. The survivors of the expedition made their return voyage to Spain via the Cape of Good Hope, and in this manner for the first time was accomplished a voyage around the globe. It is only just to concede to Magellan, and not to del Cano (Don Juan Sebastian del Cano), the glory of having been the first to make a tour of the world, inasmuch as the distance traveled by del Cano in order to complete the voyage, after the death of Magellan, was a portion of the globe which Magellan had already traveled when he made his expedition to Malacca.

A second expedition to search for the Molucca Islands was dispatched by the Emperor, under the command of Loaisa and del Cano. It left Corunna on July 24, 1525, and visited Mindanao. But although the expedition succeeded in reaching the Molucca Islands, it resulted in failure, and Loaisa and del Cano lost their lives.

The Emperor was not discouraged, and through the efforts of Hernan Cortés formed another expedition which, under the command of Saavedra, started from Zaguantanejo, Mexico, on October 31, 1527. This expedition had for its objective point the islands of Molucca, and did not touch at the Philippine Islands. The expedition finally reached Lisbon in 1536.

After the Emperor in 1529 had abandoned his claims to the Molucca Islands, which thereupon became the property of Portugal, the Court of Spain no longer gave any thought to the islands of Poniente, as our archipelago was then called, because it was believed that these islands were very poor.

Capt. Andrés de Urdaneta, one of the company of Loaisa, arrived about that time in Spain after a most eventful trip and recounted to the King what he had observed during his voyage. Charles V again

[1]Magellan did not touch at Mindanao, as has erroneously been stated in other histories of his voyage. The island of Limasagua is just off the south end of Leyte.—*Director.*

ordered an expedition to be made ready, which left Navidad, Mexico, on November 1, 1542, under the command of Villalobos. The fleet went to pieces off the coast of Sámar, and the Spaniards returned via the Moluccas to Spain, where they arrived in 1549. The project of occupying the islands of Poniente was then definitely abandoned. During the reign of Philip II that sovereign decided to send another expedition to the Philippine Islands. This was opposed by Captain Urdaneta, who had become an Augustinian friar, and who was of the opinion that these islands were embraced within the hemisphere belonging to Portugal. The new expedition left Navidad, or Natividad, Mexico, on November 21, 1564, under the command of Miguel López de Legaspi, who was given the title of *adelantado* and appointed governor and captain-general for life of all the lands he might occupy. Accompanying the expedition was the friar Urdaneta, whose knowledge obtained during the voyage of Loaisa was destined to be of the greatest utility on this trip.

On November 25, in accordance with instructions received, Legaspi opened on the high seas the seals to the documents which the royal audiencia of Mexico had delivered to him, and from the instructions contained therein he learned that his objective point was to be the Philippine Islands and not New Guinea, as Urdaneta had advised the King. The friar considered himself insulted and complained bitterly that he had been deceived; but as he was unable to avoid making the voyage, he decided to direct it by the best route to the Philippine Islands. In the instructions Legaspi was ordered not to touch at the Moluccas and to send Father Urdaneta to New Spain as soon as he arrived in the Philippine Islands, as the King was anxious to know in what manner the return trip could be made.

On February 13, 1565, Legaspi arrived at Abúyog, island of Leyte, afterwards touching at the islands of Mindanao and Bohol, and on each island he formally took possession in the name of Philip II. The expedition finally arrived at Cebú on April 27 of the same year. A fort was at once constructed, houses were put up, and, on June 1, a *nao* (a kind of galleon) was dispatched to Acapulco with information as to what had been accomplished. Urdaneta sailed as captain of this boat because of his knowledge of the route.

It was not an easy matter to enter into friendly relations with the natives who frequently attacked the small colony, which also had to defend itself against attacks by the Portuguese who came by sea. The colonists at last succeeded in baptizing the niece of Tupas, the *régulo* (a kind of petty ruler) of Cebú, and the new convert was subsequently married to a Spaniard, which was the first event of the kind in these islands.

On August 20, 1566, Felipe and Juan de Salcedo, two nephews of Legaspi, arrived from New Spain; Juan de Salcedo was the captain

who subsequently became famous as a leader in the conquest of the archipelago.

The régulo Tupas was baptized on March 21, 1567, and the name given to him was Felipe, after the King, and from that time amicable relations were established between the Spaniards and the natives of Cebú.

On May 8, 1570, Capt. Martin de Goité, accompanied by Juan de Salcedo,[1] 90 arquebusiers, and 20 Spanish sailors, sailed for the conquest of Manila in the island of Luzón, stopping at Mindoro. On their arrival at Manila they found the natives entrenched behind strong breastworks located at the mouth of the Pásig river, where now stands the fort of Santiago. The attack of the Spaniards was resisted with 12 cannon, but the natives were finally routed, and the cannon were captured and taken by the Spaniards to Panay, where Legaspi had by that time established himself.

On January 1, 1571, Legaspi organized the government of Cebú and prepared to leave for Manila. He named as *regidor* (governor) of Cebú, Guido de Lavezares, also treasurer, and organized a municipal council with 2 *alcaldes* (magistrates),[2] 6 *concejales* (councilmen), 1 secretary, and 2 *alguaciles* (constables or sheriffs). He divided the natives into *encomiendas* (royal grants)[3] among the Spaniards who were most deserving, as he had been authorized to do by the King, August 14, 1569, and in the same manner as was being done in Peru and New Spain.

Legaspi made preparations to take possession of Manila in person, having been informed by Salcedo of its fine location and natural advantages. He decided to go with the expedition on its return, and on April 15, 1571, he got together a flotilla, composed of 27 boats, and sailed, taking 280 soldiers with him. When he arrived at Manila the inhabitants fled, after setting fire to their houses. In a short time Legaspi had won over to his cause the régulos who had ruled in the newly conquered territory. Rajah Soliman was the sovereign in Manila, but Lakan Dola ruled in Tondó over quite an extent of territory with a larger number of subjects and therefore more power than Soliman.

With all due solemnity, on June 24, Legaspi founded the city of Manila, and appointed to rule over it 2 alcaldes, 12 councilmen, 1

[1] Grandson of Legaspi, born in Mexico, 1549. He had great courage and ability and has been called the Hernan Cortés of the Philippines.—*Director.*

[2] A Spanish title of long usage applied to a magistrate. After the expulsion of the Moors from Spain it had the signification of governor.—*Director.*

[3] An *encomienda* was practically a grant of Indians, irrespective of the land. At first the grant expired with the grantee. It was subsequently extended through two or three lives, and, in effect, became perpetual. As a result the Indians were slaves.

A *repartimiento* was a grant of land, which carried with it the right to the labor of the Indians occupying it or living within a short distance of it, at first for cultivating the soil. This privilege was subsequently extended so that the Indians could be used in any kind of labor.—*Director.*

alguacil mayor (head or chief constable), and other functionaries; next he divided the lands among the religious persons and other Spaniards, so that each one could build a house in the city. The old Rajah Soliman was baptized and called Felipe, the missionaries began to teach the catechism to the aborigines, while Juan de Salcedo and other captains followed up the conquest of the island. According to a provision of the "*Leyes de Indias*" the word *pacificación*, and not *conquista*, was the term to be used, but, in truth, peace already existed in the country before the arrival of the Spaniards.

Juan de Salcedo was distinguished for his valor, his activity, and his humanitarian impulses. When he began his conquests he was only 22 years of age, and by his tact and prudence he won the affections of the Filipinos. As a reward his uncle gave him the encomienda of Vigan, and upon his death he divided his possessions among the Indians (Filipinos) who belonged to the encomienda. The adelantado Legaspi, however, died before Salcedo, on August 20, 1572, and was succeeded by the treasurer, Guido de Lavezares, in accordance with instructions contained in a sealed document received from the audiencia of Mexico.

When Lavezares succeeded to the command the entire archipelago was under the authority of the Spaniards, with the exception of Cagayán which surrendered shortly afterwards; the Batánes Islands, the conquest of which occurred much later; and the archipelago of Joló (Sulu). The complete submission of the last-mentioned region to the Spanish sovereignty was not obtained until the end of the nineteenth century.

In 1574 the colony came near extinction by the incursion of a Chinese pirate named Limahong, who landed at Parañaque and penetrated almost to Manila. The colony was saved only by the opportune arrival from Ilocos of Juan de Salcedo at the head of his troops. He routed and drove out the Chinese soldiers, and, as his arrival was unexpected, the priests attributed the salvation of the colony to divine intervention.

In 1574 the natives of Manila, Tondó, and other towns in the direction of Bulacán became riotous because Lavezares, for the purpose of rewarding a Spanish soldier for services during the fight against Limahong, gave him an encomienda, which included nearly all of the slaves of Lakan Dola, *cacique* of Tondó, who had inherited these slaves from his ancestors and had otherwise obtained them by purchase. The soldier to whom the encomienda was given had severely chastised his slaves because they visited Lakan Dola and took him presents. The governor intervened and calmed the excitement by promises which he made to Lakan Dola, and succeeded, without returning him his property, in bringing the insurrection to an end.

The governors of the Philippine Islands did not limit their activities to the archipelago, thinking perhaps that the cares of the colony were not sufficient to fully occupy their time. They were ambitious to

intervene in the neighboring countries, and not only was there an expedition organized against the Sultan of Borneo, but in the political program outlined in Manila were projects for the subjugation of Camboja, Siam, and even China and Japan.

While in Madrid Gonzalo Ronquillo, who was governor from 1580 to 1583, had become so pleased with the descriptions of the Philippine Islands that he proposed to the King to allow him to go there at his own expense and take with him 600 men, married and single. Philip II had long been concerned at the heavy expenditure connected with these distant possessions, inasmuch as the revenue of the colony was not sufficient to make it self-sustaining. Accordingly he accepted the proposition made by Ronquillo and appointed him governor of the Philippine Islands for life; making also certain other concessions usually granted only to those who discovered or were the first to colonize new territories.

Before the arrival of Governor Ronquillo there had been only four *alcaldes mayores* (chief magistrates), but he began to appoint protégés until the number of alcaldes reached seventeen. Of these Bishop Salazar said, "They came poor and with scant salaries, and they deprived the Filipinos of the rice from their fields and of all the other harvested products they could get." As a result of these abuses there were frequent insurrections against the Spaniards, but these were quelled by the governor, whose followers razed Panay in the Visayas and founded the town of Arévalo in memory of his natal town.

He obliged the natives to pay a tax to the treasury on the value of the jewelry and golden trinkets which they owned, and decreed the confiscation of all precious metals if an attempt was made to conceal them. As a result many outrages were perpetrated which gave rise to innumerable disturbances.

Notwithstanding the orders given by the King that the Filipinos should not be maltreated, the friars, encomenderos, alcaldes, and other functionaries did as they saw fit and endeavored in every manner to exploit the natives. To the royal decree that slaves of all kinds in the islands should at once be set at liberty the governor answered that the decree should be amended, inasmuch as to enforce it would cause great discontent among the Spaniards.

The complaints which were received at court against the arbitrary conduct of the government were such that the King in 1584 constituted in Manila a royal audiencia, such as existed in certain parts of America, with the object of avoiding in the Philippines the results which were sure to follow from the rule of a governor whose caprices were subjected to no check either from a council or anyone else.

The president of the audiencia was to be at the same time the governor, and his official acts were under the inspection of the audiencia.

This system lasted only six years, the audiencia being suppressed in 1590. The credit for this result was given to the Jesuit priest Sanchez, who went to Madrid for that purpose, and also to convince the King that it was his duty not to abandon the Philippine Islands, as was proposed, simply because they were unproductive and an expense to the royal exchequer.

The King decided that there should be sent to the islands the largest number of missionaries available, remembering that the main object of his predecessors in the conquest of new territories was to extend the Christian faith. Thereupon there began to arrive in the Philippine Islands Augustinian, Franciscan, Dominican, and Recoleto friars. The Jesuits arrived in 1581, having been among the first to come to convert the natives. The friars were not content with the spiritual conquests made in the Philippine Islands, and began to send missionaries to China and Japan, and offered to send ambassadors representing the governor of the Philippine Islands to the sovereigns of those kingdoms. Upon their arrival in China and Japan the missionaries preached the Catholic faith, and as such attempts to proselyte the people were contrary to the customs of those countries, persecution of the missionaries followed, and they were frequently put to death. The only substantial result obtained from this attempt was to exasperate the Asiatics against the Europeans. The King thereupon prohibited the friars from leaving the Philippine Islands for the purpose of going to the neighboring countries in Asia. The only exception was made in favor of the Jesuits, and there arose between that order and the various orders of friars, principally the Dominicans, much ill feeling, which at times broke out into open altercation.

In 1583 Bishop Salazar took up the defense of the Filipinos and wrote to the King describing their sufferings and the conduct of those who governed them. He declared that the alcaldes mayores who were charged with the administration of justice pocketed the fines imposed by the King; that the public treasury was empty and the salary list unpaid; and that the annual taxes collected did not reach 30,000 pesos. Moreover, the friars refused to obey the authority of the bishop, and he advised the King to establish a monastery in each town, with six friars in each to insure good behavior.

The royal audiencia was reestablished in 1596 and entered upon its functions in 1598, thanks to the steps taken at court by Bishop Salazar. Dr. Antonio de Morga, who arrived in Manila in 1595, was appointed the first auditor of the new audiencia.[1] * * *

In 1580, when the kingdoms of Spain and Portugal became united, King Philip II ordered the conquest of the Molucca Islands. Gov-

[1] At this point in his sketch the writer has given some account of the audiencia, which, as it appears specially under Judiciary, has been omitted.—*Director.*

ernor Diego Ronquillo organized the first expedition for that purpose and put it under the command of his nephew, who besieged the town of Ternate; but the siege was soon raised and the attacking party returned to Manila. A short while after this another expedition was sent to besiege and take the same town, but also returned to Manila without accomplishing its object. In 1605 the Dutch succeeded in expelling the Portuguese from the Moluccas. In 1606 Governor Acuña decided to attack the Dutch. Accordingly he fitted out a large fleet of ships and formed an army of occupation, consisting of 1,300 Spanish soldiers of the regulars, accompanied by a large number of Filipinos. The governor assumed personal command of the fleet and army and succeeded in conquering the Dutch and taking possession of the islands. Up to 1605 the Spaniards, though constantly at war in the Moluccas, acted merely as the allies of the Portuguese and to secure them in the possession of those colonies which were the property of Portugal; but after the victory (over the Dutch) obtained by Governor Acuña in 1606, and by agreement between the Spanish and Portuguese courts, it was decided, and so decreed in the royal *cédula* (order) of October 29, 1607, that all of the Moluccas should be under the exclusive charge of Spain, to be ruled through the governor of the Philippine Islands.

The effort to colonize the Moluccas, however, was destined to be unsuccessful; after a series of disasters and disappointments Spain withdrew her troops from Ternate in 1669. The cost of maintaining her sovereignty in those islands had proved to be such a heavy burden on the royal exchequer that no further attempt was ever made to conquer or hold them.

From 1717 to 1719 Fernando de Bustamante was governor of the archipelago. Having discovered great irregularities in the management of funds in the *real hacienda* (royal treasury), he decided to introduce reforms in the management of the public moneys. He began by confining those who were supposed to be the delinquents and prosecuting them in the courts. The high officials, who thus found themselves involved, had never been accustomed to this method of procedure and were very indignant with Bustamante. It having come to the governor's ears that a rebellion was planned against his government and that the friars were providing refuge in their churches for those who were known to be his most determined enemies, he issued a proclamation calling on all males over fourteen years of age to form a battalion with which to defend the cause of the King. The call was answered and a body of volunteers was formed. The archbishop and a number of lawyers had signed a resolution in which they denied Bustamante's right to order the arrest of the notary Osejo who had taken refuge in the cathedral; the governor thereupon had the archbishop and the lawyers who had taken part in the cabal also arrested.

These arrests gave rise to still further disturbances, and the friars, fearing that the governor might take measures against them also, decided to lead the rioters. The refugees came out of the churches, secured arms, and being joined by certain of the townspeople, marched on the palace of the governor, which was situated on the south side of what is known to-day as the Plaza William McKinley. The friars were in the lead and carried crucifixes in their hands. Governor Bustamante when he became aware of the uprising ordered the guard to fire on the rioters; but the soldiers did not obey the order, and when the rioters arrived at the palace the guards lowered their arms before the sacerdotal vestments of the friars, who held aloft the crucifixes and images of saints. The *alabarderos* (halberdiers) also made way for the rioters.

The ill-fated Bustamante came out with his gun in hand and met the crowd on the stairway; the rioters fell upon him and in a few moments he was mortally wounded. His son came to his aid and was also shot down.

The rioters dragged their governor, dying as he was, to a jail in the lower floor of the audiencia, where he died on the evening of the same day, October 11, 1719; all aid was denied him and he was even refused a drink of water. The governor's son was dragged to the stable of the palace, where he died the same afternoon; he also was denied all medical aid and other assistance. The rioters, under the leadership of the friars, who congratulated the assassins, then directed their steps to the fort of Santiago and liberated the archbishop, who at once assumed charge of the government of the islands. These crimes were never punished.

As revenge for the unjust seizure of a Dutch ship at Mindanao in 1735 by the Spaniards, who put all of the crew in prison, there appeared in the Bay of Manila in July a Dutch squadron under Commodore Vry. The commodore at once demanded that the prisoners be delivered to him and threatened if this were not done to bombard the city. As his demand was just, and as the means for the defense of the city were poor, the governor yielded. This incident closed the desultory warfare which was maintained in the Philippine Islands against the Dutch during the sixteenth, seventeenth, and eighteenth centuries.[1]

[1] Between the end of the sixteenth century and the middle of the eighteenth Spain and Holland were public enemies; the Dutch ships were constantly on the lookout for the Spanish galleons sailing between Manila and Acapulco, Mexico. The establishment of Dutch trading stations in the Moluccas greatly facilitated their operations, but brought upon them several Spanish expeditions, of which the more important are described. In 1609 a Dutch squadron anchored in Mariveles bay. It was defeated and nearly destroyed by a fleet under Governor Silva. Again, in 1611, Silva with a squadron encountered and defeated the Dutch in the Moluccas. Three or four other minor naval engagements were fought in Philippine waters between the Spaniards and the Dutch.—*Director.*

Before these events there had been several encounters between the Spaniards and the Dutch. Among these naval battles may be mentioned the fight which occurred in 1600 in Manila bay, when the Dutch corsair Oliver van Noort made his appearance with two ships of war. His object was to capture the nao which annually left Manila freighted with rich merchandise for Acapulco. When the foe was yet a short distance from Manila he was discovered and preparations were made to attack the hostile ships. Two galleys were equipped and when the corsair's two ships appeared at the mouth of the harbor the *oidor* (judge) De Morga with a fleet of several vessels and 300 Spanish soldiers went out to meet them.[1] The battle occurred on December 14; De Morga vainly attempted to board the ship on which was the Dutch commander, but his own ship was sunk. The Dutch ship was set on fire and retreated from the scene of action, leaving her consort in the possession of the Spaniards. The Spaniards lost in killed during this action 109 soldiers and 150 Indians and negroes, but they celebrated their victory with religious festivities, and hanged the 25 captured Dutch sailors, together with their captain, Biesmann.

IMMIGRATION OF CHINESE.

By reason of the limited number of Spaniards in the Philippine Islands and the facility with which Chinamen came to Manila in large numbers, measures were adopted to limit the immigration of the Chinese, notwithstanding the recognized fact that their services were indispensable in certain kinds of work.

Fearing that the Chinamen might scatter throughout the islands, Governor Ronquillo in 1580 built the *Parian*[2] and *alcaiceria* (Chinese silk market), and all of the Chinese, Japanese, and Malays from Borneo who lived in Manila were cooped up in these quarters. The Parian was built under the cannon of Fort Santiago on the opposite side of the river, on the spot where the custom-house is to-day. After a number of years, as the number of Chinamen continued to increase, the location of the Parian was changed to *Arroceros*, where to-day are located the quarters of the *Estado mayor* (Spanish general staff) and the botanical gardens; these lands were laid off in a barrio, and were covered with houses inhabited by Chinamen who had their stores on the lower floors. They were also provided with a church, a cemetery, and a Catholic missionary; their tract of land was surrounded by a high fence, and a military guard was put in charge. On that piece of land were brought together all the Chinamen who lived in Manila, with the exception of those who were married to Filipino women.

[1] For this expedition De Morga was appointed captain-general of the fleet by Don Francisco Tello, the governor of the islands.—*Director.*

[2] The general market of the Chinese; also the name of a district in the city of Manila at that time.—*Director.*

THE SALIENT PLACE OF ARMS, PARIAN GATE, WALLED CITY, MANILA.

The Parian became the commercial quarter of Manila, where there were to be found Chinese, Japanese, Indian, and European wares and merchandise, and where were many Chinese tradesmen, such as silversmiths, shoemakers, barbers, and painters, who were governed by an alcalde mayor with certain ministers supported by a military guard.

The Chinamen were the first carpenters, blacksmiths, sculptors, and painters employed in the Philippine Islands, and the friars encouraged their coming to the country as they hoped to be able easily to convert them to the Catholic faith. In 1603 there arrived a Chinese embassy in Manila ostensibly to ascertain whether gold was to be found in Cavite; this aroused a fear in the minds of the authorities and throughout the colony that the real intention of the Chinamen was to foment a rebellion. On October 3, whether through fear of the authorities or because they really contemplated an uprising, the Chinamen burned the town of Binondo and assassinated some of the Filipino residents. Gov. Luis Pérez Dasmariñas, whose father had some years before been assassinated by the Chinese crew of a galley on which he had embarked, led the troops against the Chinese rioters; he suffered severe losses and had to return to Manila. Then all of the Spaniards, including the friars, took up arms and the rebellion having become universal among the Chinese they were pursued from place to place and were totally exterminated. The Chinamen killed in these actions, according to certain chronicles, reached the number of 25,000.

After the extermination of the Chinese the need for diligent workmen, so necessary to the colony, was felt very acutely, but the Chinamen continued to arrive from their country and in a short time their number in the islands had so increased that in 1639 it was estimated at 40,000. About this time they were again the victims of a terrible slaughter; under the pretext that they had rebelled in Calamba they were all put to the sword and in five months about 22,000 had been killed. In 1662 the Spaniards, through fear that the Chinese pirate Kue-Sing intended to attack Manila, revenged themselves on the unhappy Chinamen ashore. In this new persecution the Spaniards were assisted by the Filipinos. The Chinamen tried to defend themselves and took refuge in the Parian, in Manila, and were killed there in large numbers. After the slaughter of 1662 the number of Chinese residents in these islands diminished greatly, and in 1685 was not more than 8,000.

On June 30, 1755, Governor Arandia, in obedience to instructions received from the King, ordered that all Chinamen should be expelled from the Philippine Islands, excepting 515 who had become Christians and about 1,000 more who pretended to be studying the Christian doctrine and promised to allow themselves to be converted. The Parian Arroceros was then abandoned and another building was put up at San

Fernando for the purpose of having them completely at the mercy of the artillery of Fort Santiago. The successful business enterprises which the Chinamen had developed in the Parian had aroused the envy of the Spaniards. It was undoubtedly due to the wishes of the Spanish merchants that the expulsion of the Chinamen was ordered. At the same time that the orders of the governor were being carried out the Spaniards were forming a society, under the protection of La Virgen del Rosario, the object of which was to take possession of the buildings and locality where the Chinamen had lived and to carry on the business operations in which they had engaged. This society lasted only one year. In 1784 the King ordered that the church and other buildings in the Parian should be removed or destroyed, as he considered them a menace to the safety of Manila in case of an attack.

In the year 1762, during the time of the English occupation of Manila, the Chinamen were accused of attempting an insurrection, and the persecutions to which they were subjected provoked their rebellion in Guagua (Pampanga); this was followed by another general slaughter and by the expulsion of the survivors from the islands. The need of workmen as useful as the Chinese had proved themselves to be was soon felt, and in 1778 the order for their expulsion was revoked, and large numbers of Chinamen again came to live in these islands. In 1804 it was decreed that only Chinamen who devoted themselves to agricultural pursuits should be allowed to live in the Philippine Islands. In 1834 they were privileged to exercise any branch of industry, but were required first to obtain permission from the Government. In 1849 new rules governing the admission of Chinamen were enacted: they were divided into transients who were allowed to remain not over three months, and into residents who could live as long as they chose in the archipelago. In 1850 still another order was issued extending to the Chinamen all of the privileges which were granted to other agriculturists.

LATER HISTORY.

Upon the death of Governor Arandia (1754–1759) Miguel Ezpeleta, bishop of Cebú, became governor and captain-general. Manila was still in ignorance of the fact that war had been declared between England and Spain, and the first news of it was the entrance of an English squadron into the Bay of Manila on September 22, 1762. An English officer landed and delivered to the governor a demand for the surrender of the city of Manila and the entire archipelago to the King of England. This demand was signed by Brigadier Draper and Admiral Cornish. The governor refused to accede to the demand, and in a short time the English had disembarked at Parañaque and

had taken possession of Fort San Antonio Abad and of the churches of Malate and Ermita, and followed it up with an attack on Manila. The war ships on their part bombarded the city, and on October 5 Manila was taken by assault. The governor was made responsible for this disaster; the fact was that Manila had not been provided with sufficient means for defense against a European enemy. After the English had become masters of Manila the oidor, Don Simon de Anda y Salazar, left the city, accompanied by a servant, and took refuge in Bulacán, where he very quickly organized troops to resist the English occupation and to prevent them from extending their power to the rest of the country. During the time that Anda y Salazar ruled in the name of the King of Spain the English were able to bring under their dominion only the towns of Manila and Cavite, over which Brigadier Drake ruled as governor.

As a defense against the natives and the attacks of Portuguese, Dutch, English, and Chinese, the construction of temporary forts was commenced in the Philippines at an early date. These were followed by permanent works, which are still to be seen in Manila, Cavite, Corregidor Islands, Isabela de Basilan, Polloc, Balábac, Cebú, Ilofilo, Antique, Cápiz, Romblón, Negros Occidental, Cuyo, Culión, Linapacan in the Calamianes, Surigao, Misamis, Dapitan, Joló, Zamboanga, Malabang, and Reina Regente.

The forts are of masonry, with flank defenses protected by moats, or ditches. In some of the larger forts there are barracks and quarters for the officers and enlisted men, and large storerooms. Many of the forts are still well preserved and were utilized by the United States as prisons or storehouses during the recent Filipino rebellion.

The illustration of Fort Pilar, Zamboanga, from a recent photograph, is a good illustration of the type of forts referred to above. The fortifications of Manila were completed some years before the attack of the British, who established their breaching batteries near the middle point of what is now known as the Luneta and directed their fire against the foundry bastion of the Walled City, which was breached and carried by assault.[1]

At this time there existed a state of anarchy throughout the archipelago; all kinds of robberies, assassinations, and other crimes were committed in the name of patriotism, and as a pretext those committing these crimes claimed that they were resisting the English occupation. The oidor (Anda) did the best he could and put forth all of his energies toward maintaining order and saving the property of his King.

[1] A map of Manila as it was at that time, made in 1735 and captured by the English in 1762, is reproduced in this volume. It was contributed to the Census by Maj. Gen. Geo. W. Davis.—*Director.*

In 1764 official notice was received in Manila of the Treaty of Peace of 1763 between France, England, and Spain; thereupon hostilities ceased. About this time there arrived in Manila the new governor, La Torre, to whom Anda turned over the command which he had so successfully exercised. On March 31 the English governor evacuated the town of Manila and the Spaniards again took possession.

The heroic Anda y Salazar afterwards returned to Spain and occupied the important position of member of the council of His Majesty the King; subsequently he returned to Manila and was governor and captain-general from 1770 to 1776.

On April 2, 1767, Charles III decreed the expulsion of the Jesuits from all of his dominions, and in compliance with these orders the Jesuits were expelled from Manila by Governor Raon in 1770.

During the time that these ecclesiastics resided in the Philippine Islands they had become possessed of great wealth, and their prestige was also largely due to the eminent men to be found among them. They had built magnificent churches and convents in many towns, among others the handsome church of San Ignacio and the college of San José, with a mission house where to-day are located the *cuarteles de España* (barracks of Spain) in the Walled City.

The expulsion of the Jesuits was accomplished without the least difficulty, as they did not attempt to oppose to the order of the King the influence which they had over the Filipinos and over the majority of the Spanish residents in the colony. All of their goods and holdings became the property of the King, their curates were expelled and succeeded by others belonging to the order of the Recoleto friars, who had arrived in the Philippine Islands at a later date and whose possessions were much inferior to those of the Jesuits. The printing office, the college of San José, and the seminary where they educated Filipinos for the clergy were put under the administration of the archbishop, and their holdings were divided among the religious orders which remained in the Philippines.

On February 14, 1810, there was issued a royal decree that the Philippine Islands, as well as the Spanish possessions in America, should send representatives to the Cortes, which exercised legislative functions in Madrid. Don Ventura de los Reyes was elected as delegate from the Philippine Islands.

On April 17, 1813, there was published in Manila the constitution of the year 1812 of the Spanish monarchy, but two years afterwards, when Ferdinand VII again ascended the throne, this constitution was abolished; it was again published in 1821 and the selection of Filipino deputies again decreed. In 1823 Ferdinand VII again abolished the constitution. Due to these radical changes there were some uprisings in Ilocos in 1814, but in 1823 there was no excitement.

In 1820 Manila was visited by the cholera for the first time in its history. This epidemic was brought from India by a French vessel. The mortality was very great, and the public having come to believe that the deaths were due to the poisoning of the waters of the Pásig river by the foreigners, who a short time before had been given permission to live in Manila, there was an uprising among the Indians and within two days they had massacred all the foreigners, both European and American. General Folgueras did not attempt to stop these atrocities until the Filipinos began to kill the Chinamen, and then he feared that if the excitement continued they might be tempted to kill the Spaniards also. Accordingly the archbishop and the religious orders formed a procession through the streets with the object of calming the public excitement.

In 1823 there broke out an insurrection led by Captain Novales, a Filipino, who at the head of 800 men captured the King's barracks in Manila and also the palace of the governor and the ayuntamiento. General Folgueras was assassinated in his house. The rebels having been defeated, Novales, together with other leaders of the insurrection, was shot. The cause for this uprising was the fact that Filipino officers had been removed to make place for Spaniards lately arrived from Europe or had been given positions subordinate to the newcomers.

In 1835 there was again published in Manila the famous constitution, and shortly afterwards there were named as deputies from the Philippine Islands to the Cortes, General García Camba and the Filipino lawyer, Juan Francisco Lecaroz, who were elected in the year 1836, but in the following year the Cortes decided that the representation from the Philippine Islands in that body should be discontinued and that this colony should thereafter be governed by special laws.

From the first days of the Spanish dominion of these islands the pirates of Mindanao and Joló had infested the waters of the archipelago, making forays on the coast towns, and had even attempted to bring their ships into the Bay of Manila. The governors of the Philippine Islands had used all the means in their power, both force and diplomacy, to subjugate the chiefs of the so-called Moros of the southern Philippines, but it was not until at the end of the nineteenth century that it can be claimed that the Spanish sovereignty was really extended to that region.

During the Spanish domination there were frequent uprisings and disturbances of the peace in isolated parts of the islands, due sometimes to religious excitement among certain fanatics and at others to the plots of the friars, the encomenderos, the alcaldes, and others in authority. In 1896, when there was not even the remotest reason to apprehend a rebellion which should have for its object secession from Spain, a revolution was started; and two years later, when the

conditions of this country were, from the Spanish point of view, most deplorable, hostilities were inaugurated between Spain and the United States of America.

On May 1, 1898, an American squadron, with Commodore Dewey in command, in a few hours destroyed the Spanish squadron under the command of Admiral Montojo, in Manila bay near Cavite. After taking the port of Cavite, Commodore Dewey blockaded Manila, and on May 19 Señor Emilio Aguinaldo returned from Hongkong and massed the Filipinos in arms against Spain; a large number of Spaniards were taken prisoners, among them many military, civil, and religious officials.

On August 13, 1898, the United States naval forces under Admiral Dewey and the land forces under General Merritt accepted the surrender of Manila, and the Spanish flag was hauled down forever in the Philippine Islands, to be succeeded by the sovereignty of the United States.

When the Spaniards arrived in the Philippine Islands they found the inhabitants of Malay blood divided into town groups, each having its own government. These small groups were in many places known by the name of *barangay*, which is also the exact word used to describe a small craft used by the indigenes and would therefore appear to indicate that the people forming each of these town groups were descendants of the crews of particular crafts since the time of their original immigration to these islands. The population of the various barangayes was in some cases not over 50 inhabitants, and in others, as was observed by Salcedo in Ilocos, the number reached as high as 7,000.

SLAVERY.

In all of the barangayes slavery was an accepted institution. The slaves were divided into two classes: the real slaves, that is, prisoners of war and those who were bought outright or given in payment of a personal debt, called *aliping saguiguilir;* and those who were generally considered as being only in a condition of semislavery, the latter class composed of such servants as could not be sold, constituting the bulk of the plebeian population of the barangayes, and called *aliping namamahay*. These names are taken from Tagálog, but in almost the entire extent of the archipelago the social and political organization in the various localities was more or less similar to the description given above. Quite often different barangayes would come together and recognize some joint chief as in authority over them. The chief was usually chosen in such cases because of his personal ability or by reason of his family connections, and these chiefs, to whom was given the generic name of *dato*, were afterwards given other titles such as *rajá*, *sultán*, or *laka*, which the chiefs occasionally

assumed of their own volition. An attempt has been made to translate these words into king, régulo, or prince. In addition to the slave class and the chiefs there was yet another class of inhabitants called in Tagálog *maharlika*, and who in reality constituted the warriors of the barangay. It was the custom when any inhabitant of the barangay needed money, to offer himself as personal security and to serve as a slave to the creditor who advanced the funds; the creditor had a right to transfer both his credit and the security to another. Inasmuch as the wealth and power of each chief depended on the number of slaves held by him, it is easy to understand that each chief tried by all imaginable means to increase the number of slaves he held in the barangay. A free man became a slave if he entered the house of a chief without asking permission; if he crossed the fields planted by a chief; or if he looked at a chief's wife; but it was not a common occurrence for one to enter the state of slavery in this manner, as the offenses described were considered very serious and it was only rarely that anyone was guilty of their commission.

LOCAL GOVERNMENT.

The lands of each barangay were divided among the residents so that each one had his holding, and no resident of one barangay was allowed to cultivate lands in another barangay unless he had acquired such lands by inheritance, gift, or purchase. In some barangayes the lands belonged to the chief through purchase from the original owners. In some localities the chiefs or principal personages also owned the fisheries, and their rights were religiously respected.

The chief of the barangay acted as judge in all cases of litigation between his subjects; at times he was the sole judge, but at other times he was assisted by some neighboring dato or by some responsible person of his own tribe. It was usually the custom in civil suits to arrange a compromise between the litigants; in arriving at a decision in criminal suits custom alone was followed, as there was no written law. Certain crimes were punished by death, such as the seduction of the daughter or wife of a *principal* (leading member of the community); sometimes capital punishment was commuted to slavery and in other cases the children of the man condemned to death were made slaves. It was a common thing for criminal offenses to be dismissed after the defendant had paid the plaintiff, or perhaps the dato himself, a certain sum of money called a fine.

The real facts were that as the judicial system, so called, was founded on no principle of law, as is the case in all primitive communities, might usually meant right. The system of hereditary power had, therefore, to be supported by personal valor, by force, and by activity and energy on the part of the chief, whose constant fight was to prevent another,

more strenuous than himself, from deposing him. For mutual protection certain of the chiefs formed alliances and pacts; this was a common custom among the Tagálog and Visayan peoples.

As a general thing it was only the free men who marched to battle, but the slaves were occasionally drafted as soldiers, especially when a sea fight was contemplated and where good rowers were needed for the ships. The arms used were *kampilanes*, *talibones*, *sandatahan*, and *krisses* (lances, javelins, bows and arrows, and long knives); they also used shields and helmets made of wood or copper, and corselets and breastplates made of strips of the horn of carabaos, a species of water buffalo which came from Siam. The Spaniards found the Filipinos in possession of cannon in Manila, Caintá, Taytay, and in the island of Lubang. In Manila there was a foundry where cannon were cast, ostensibly under the management of a Portuguese, but a skilled workman, an Indian named Panday Pira, appeared to be in charge of the foundry and continued his trade under the direction of the Spaniards after they had occupied Manila.[1]

Many of the barangayes were in a constant state of warfare with their neighbors and with distant tribes, and, as there was no power sufficiently strong to maintain order on the high seas and inland waters, pirates and bands of ladrones made commercial undertakings very uncertain. The war ships, or war boats, of the Filipinos were fitted out for navigation with oars and sails. They were all of light draft, and balance poles made of strong cane or bamboo were used to prevent their capsizing. These craft had considerable speed, and were able to navigate shallow streams in pursuit of the enemy, or to flee when themselves pursued by a stronger force. In order to protect commerce each craft numbered among its crew men at arms, and when these precautions were not taken and hostile tribes were met en route the merchantmen were usually worsted.

It is asserted that the Philippine Islands were at one time a colony of the Chinese Empire, but there is no proof of this fact and the probabilities are that there is no foundation for this statement.[2] It is

[1] In a letter to the King, dated July 25, 1570, Legaspi, in speaking of the Moros found in Panay, wrote: "The latter have artillery which they themselves cast and finish, and likewise powder and other ammunition." Also: "I send you two bronze culverins made by the Moros of this land, so that Your Majesty may see what dexterity they possess in making and casting artillery." The natives of Manila probably learned to make cannon from the Moros or Chinese.—*Director.*

[2] In his History of China, 1586, Father Juan Gonzales de Mendoza, in writing of the Philippine Islands, states as follows: "These islands were formerly subject to the King of China until he relinquished them voluntarily." In De Morga's account of the Philippine Islands and other eastern countries, translated by Hon. H. E. J. Stanley and published by the Hakluyt Society, the following footnote appears: "The *Dutch Memorable Embassies* states that the Spaniards subjected these islands almost without striking a blow, the inhabitants having forgotten the art of war, and almost renounced civil life since they shook off the Chinese yoke. Since the Chinese had lost their dominion over these islands they had not ceased to trade with them, etc." There is no reliable evidence that the Chinese ever had political control over any part of the Philippines.—*Director.*

certain, however, that the Chinese were engaged in trade with the Filipinos before the arrival of the Spaniards, which fact is certified to by members of Legaspi's expedition. It was asserted that notwithstanding the insecurity of the high seas the Chinese carried on commerce with certain of the tribes living on the coast lands of the Philippine Islands. The Spaniards found on many of the islands porcelain and china ware, but it is not probable that they found a Chinese colony or Chinese residents in any of the islands, as nowhere in their documents or writings is record made of any such discovery. Japan also engaged in trade with these islands. Commercial undertakings were well understood in the island of Luzón and in the Visayan Islands; companies for the transaction of business were organized, and the uses of exchange, bonds, and other business methods were well understood.

Money was unknown, and as an exchange medium they made use of gold dust, which was paid and accepted by weight. The weights used were derived from China, such as the *tae* or *tael*, which was divided into two *tingas* (which in Malay means "half"); each *tinga* was equivalent to one *sapaha*, which was subdivided into seven *sema*, and the smallest weight known was a *sangasahe*. For the weighing of merchandise there was used the *pikul*, and for measures of capacity the *kaban*, the *ganta*, and the *tsupa*. The measures of length used were the palm of the hand and the length of the forearm.

The Tagálogs, Visayans, Pampangos, Pangasinánes, Ilocanos, and probably other tribes, made use of an alphabet which can properly be called a Filipino national alphabet, inasmuch as with slight differences it was in universal use at that time, and was continued in use by the Tagbanúas of the island of Paragua and the Manguianes of the island of Mindoro up to as late a period as ten years ago. The alphabet was composed of seventeen letters, three of which were vowels. A consonant standing alone was always pronounced with an *a* sound following; by the use of a dot or dash near and above the consonant stem, in much the same fashion as is used in certain systems of shorthand, instead of the sound of the *a* the sound of the vowels *e* or *i* was produced; when the dot or dash was placed below the consonant stem the vowel sound given was equivalent to *o* or *u*. This system of writing was very imperfect. There were no signs provided for numerals. Some books were written on the leaves of palm trees, the text of which consisted of songs, formulas for enchantments, and probably their chronicles and the history of voyages and wars. All of these books were burned by the missionaries who first arrived, probably in their zeal to destroy all vestiges of the ancient idolatry.

It is a difficult matter to determine what was the religion of these people. It would appear that they believed in two or three principal gods who were put in a superior class and given the direction of

everything, and in the existence also of certain minor deities who were responsible for all the evil occurrences, but who were occasionally benevolently inclined. To these inferior gods the aborigines offered sacrifices either to calm their anger or in gratitude for some benefit received. The principal god was called Bathala in Tagálog, which is a word derived from the Sanskrit, the etymology of which has been traced in different ways by persons more or less versed in such research. The religion which was known throughout the islands, and which could therefore be called the true religion of the Filipino people, consisted of the worship of the *anitos*. These were not gods; they were the souls of the ancestors, and each family worshiped its own dead who were supposed to have died in order to be able to use their influence for the benefit of the living. When a noble died it was the custom to sacrifice a certain number of slaves in order that in the next life the noble should have a suitable retinue, according to the importance of the position he held while alive. It would appear that among the Visayans the custom obtained of burying slaves alive; this was done in order that the dead grandee might have *live* people to wait on him in the next world. Sometimes in order to cure a serious illness with which the master had been stricken, some of the slaves were killed in order that their souls, passing to the other life and into the service of the sick master's ancestors, might plead with them and calm their anger and induce them to leave their descendants in peace. Before the time of the arrival of the Spaniards some of the Moros of the island of Borneo had introduced into the Philippine Islands, principally in Mindanao and Joló, the Mohammedan faith, and even in Manila were found members of that faith.

The funeral ceremonies were really wakes: it was the custom on these occasions to eat and drink up a good portion of the fortune left by the deceased. The priests, called *katalonan* in Tagálog and *baibailonan* in the Visayan dialect, were the principal actors at these religious ceremonies: they executed war dances armed with a lance with which they first stabbed a swine as a sacrifice, and would probably spear other animals as well, and even the slaves themselves. The Spanish missionaries looked on these ceremonies with horror; they believed they were inspired by some spirit from the infernal regions; they were described as bacchanal feasts, but, as the missionaries were filled with repugnance at what they had seen, the descriptions left by them were no doubt exaggerated.

The dress of the men consisted of a kind of shirt, without collar or cuffs, reaching a short distance below the waist; the legs were covered with a piece of cloth tied around the waist, hanging in the manner of an apron, or else with a piece of cloth called *bahake*. They did not as a general thing wear any covering on the head, but when they left

their homes to go some distance they used a species of turban and also a kind of hat called *salakot*. The clothing worn by women was similar to that worn by the men, but made of cloth of finer texture and more expensive. When their means justified the expenditure, they decorated their apparel with rich laces and other trimmings. Both the men and the women used necklaces, bracelets, rings around the ankles, earrings, combs in the hair, and finger rings of plain and worked gold. The lower class went barefoot, but the upper class wore slippers and low-cut shoes which were embroidered and made of bright-colored materials. It was considered good taste to perforate the teeth and fill the holes with gold and to file the incisors to a conical form.[1] In some localities it was the custom to stain the teeth black, but the aspiration of the upper class was to make constant changes in the shape and color of their teeth.

The datos and chiefs were always accompanied by their servants when they went out, and each servant carried with him some object which his master required for his personal use or toilet; among these may be mentioned, as one of the most important, a metal box containing the *buyo*, a native leaf which was mixed with lime and chewed throughout the archipelago in the same manner as tobacco is elsewhere.

The houses were built on high piles or supports made of timber, and the space left between the floor of the house and the ground was used as quarters for the servants. It was quite common to build a town or village over the water on the edge of some river or lake, and even on the seashore.

From the sap extracted from palm trees or from coconuts they fermented a kind of light vinegar which by distillation they converted into low-grade spirits, to which the Spaniards gave the name of *vino*. It is quite certain that the Filipinos learned the art of distillation of spirits from the Chinese.

They cultivated the ground, harvested crops of rice, sweet potatoes and other tubers, knew how to construct implements for the hulling of rice, and how to separate the chaff and whiten the grain by pounding it in a mortar; manufactured different kinds of articles from mother-of-pearl, constructed apparatus for fishing, made cutlery, and wove textures from hemp fiber, *piña*, and cotton, and also from silk, which they imported from China; knew the art of making lace and embroidery, and carved statues of their ancestors, which they called anitos; and worked in gold, silver, and copper, which they converted into jewelry, and which they also used to decorate their arms. Commerce was conducted between the various tribes both by land and sea, and the people of a number of barangayes met in certain localities, previously selected, for the purpose of trading in various

[1] This practice still prevails among the wild tribes.—*Director.*

wares. The staples in which they dealt were rice, fish, boats, cloths, slaves, swords, arms, wooden plates, and other articles made of copper and porcelain which were brought in from China. In the absence of any artificial medium of exchange, commerce was carried on by the trade or barter of one article for another. Frequently they used gold dust as a medium of exchange, the intrinsic value of which was more uniform. In the mountain regions the customs of the aborigines were somewhat different from those described, but the non-Christian tribes have preserved to this day most of their ancient customs, almost without change. It is not necessary to refer to them in a historical sketch.

The encomenderos were the first Spaniards, after the conquest and pacification of the colony, who represented the civil authority in the islands: they were obliged to maintain order and secure the well-being of the Indian residents of their encomiendas or holdings, and to defend their tenants against any encroachment on their rights by the Spaniards, soldiers, alcaldes, and judges; and to endeavor to bring their tenants together in towns and furnish them with opportunities to be converted to the Christian religion and to help them build churches and convents. The encomenderos were also obliged to build their living houses of stone in the towns where they took up their residence; in Volume IV of the Laws of the Indies is contained full details as to the manner in which this house should be constructed. It was prescribed by law that all bachelors who were given an encomienda should get married within three years from the date of their appointment.

The encomienda consisted of a portion of land, of greater or less extent, which was donated to a person as a reward for his services or which was given to a religious order for purposes of support, and all of the natives resident on such encomiendas were held in a species of slavery by the encomendero.

Each resident of an encomienda paid a certain tribute to the encomendero, who in turn paid a per capita tax to the general treasury. This tribute or tax was the same in amount for all kinds of Filipinos whether they were on a private encomienda or living on lands belonging to the Crown.

The encomenderos were charged with the succor and support of the people on their holdings in case of any calamity, famine, or public disaster, and they were prohibited from charging tribute in bulk against the various barangayes—that is to say, they should not make the chiefs of a family or tribe responsible for the payment of tribute by the various members, nor were the encomenderos allowed to use force to secure the payment of a tribute. When an encomendero received a tribute from his people, he thereupon was considered to have assumed the duty of acting as their protector. The King always

showed great sympathy and humanity in the orders he issued for the care of the native tribes.

Notwithstanding the provisions of law whereby the encomenderos were limited in the amount of service which they could require the Indians to perform, and notwithstanding the strict instructions issued by the King directing that the encomenderos who abused their slaves should be punished, it was nevertheless a fact that they treated their slaves shamefully. These abuses became so great that in 1573 Governor Lavezares was obliged to adopt measures to control the excesses committed by the owners of the Visayan slaves.

The abuse of power by the slave owners finally resulted in an uprising among the Indians in the year 1583; and as no attempt was made by the government to remedy the abuses committed by the slave owners, the Pampangos and Tagálogs, in 1585, united in open rebellion which was put down by Governor Santiago de Vera, who also put a stop to the abuses to which the slaves were subjected.

In 1583 the King received a memorial sent him by Bishop Salazar containing a detailed account of the conduct of the slave owners. The bishop gave full details of the abuses and tyranny to which the Indians were subjected by the encomenderos, and the King thereupon issued a mandate on March 27, 1583, directing the members of the Philippine government to prevent such conduct on the part of the slave owners, and requesting the bishop to keep him informed of the results.

However, no writ, order, or instruction issued by the King having for its object the protection of the Indians was ever complied with, nor was there ever known to be a case in which any owner of slaves was punished for disobedience to the royal mandate.

The tribute which was commonly collected by the various encomiendas was 8 *reals*, payable either in gold or in products of the soil. The collection was made by the encomendero himself, accompanied by a detail of arquebusiers, who obliged the principal in each locality to pay tribute for all the Indians in his vicinity. If the payment was refused, or not made for the total number of Indians assessed against such principal, he was whipped and otherwise punished in such a manner that deaths from this cause were frequent. After the tribute had been collected the encomendero did not occupy himself any more with his slaves until the next year, when the same operation was repeated.[1]

In some of the royal mandates it was directed that only Christianized Indians should be given as slaves in encomiendas, but this provision of the law was not complied with, as the non-Christianized

[1] Up to the year 1577 the tribute was a gold *maiz* or 3 reals for each Indian, although some paid less. In that year it was 8 reals, and later 10 reals, which could be paid in money, cloth, rice, etc.—*Director.*

Indians also were often made slaves. The condition of the Christianized slaves was improved to a certain extent by the missionary friars who protected them from the abuses of their masters.

The governors distributed the lands in encomiendas to their favorites, and followed their own inclinations. The encomiendas reserved for the King were in certain localities in which the tribute paid would not add materially to the royal treasure box. Notwithstanding all this the encomenderos were not rich; few of them obtained from the encomiendas any rental of importance, and the majority lived in poverty. But no other result could have been expected, for the reason that the owners occupied themselves only in the collection of tributes, and in no manner encouraged their slaves or tenants to improve the lands and their own condition. In those towns where there were Spanish residents no attempt was made to farm the lands, nor was any live stock raised.

The encomenderos failed to pay the *diezmos* (church tithes) for which they were legally responsible, and when, in 1582 or 1583, they were requested to pay a certain percentage for the maintenance of the tribes, they refused to do so, and made a counter proposition that the tribute collected from the Indians should be increased by 2 reals, and that the increase should be paid into the royal treasury. The Spaniards were not allowed to emigrate freely to the Philippine Islands, and were required to obtain a permit before they could come. The provisions of law regarding such permit were contained in Volume IX of the *Recopilación de las Leyes de Indias.* The term during which they were allowed to live in the Philippines was limited, and married men who left their wives in Spain were allowed to remain away only three years.

When a new governor arrived he was always accompanied by an official family of his own, and by a certain number of parasites who had no position assigned to them; but when they had once arrived in Manila all of the governor's followers were promptly given positions by their protector, or new positions were created for them, which as a rule lasted during the time the governor remained in the country. The laws clearly specified what kind of people were to be allowed to accompany the governors, adelantados, alcaldes, and *corregidores.* In this way the attempt was made to prevent the coming to the colonies of any persons of Moorish blood, Jews, heretics, or persons who had been disciplined by the Holy Office. The Spanish soldiers who came to the Philippine Islands were obliged to return to Spain when their term of enlistment expired, and were never allowed to remain in the colonies.

But the restrictions regarding emigration to the Philippine Islands

were not enforced against others who came to these islands for the purpose of permanent residence. On the contrary, the latter class were given certain prerogatives and concessions: encomiendas were donated them and they were given opportunities to become nobles; they were exempt from the payment of taxes for a certain number of years; and were allowed other privileges which they used and abused with the greatest freedom.

Outside of the encomenderos, alcaldes, corregidores, and enlisted men and officers of the army, few Spaniards were known to settle in the provinces and devote themselves to agriculture or any other industry. It was only in Manila that a few were found engaged in commerce, and these were obliged to submit to the abuses of the public officials. During the earlier days of the colony when a Spaniard arrived he was obliged to enroll his name for militia service, and many of these who had no means of subsistence made use of their arms against the Indians until, as Bishop Salazar says, "It would happen that when an Indian had his own dinner cooked a soldier would come in and take it away from him, and beat and otherwise ill treat him in the bargain."

Foreigners were absolutely prohibited from living in the Philippine Islands. They were only allowed to remain in Manila during such time as the monsoons would not allow them to sail away in their trading ships. Several royal cédulas were issued directing the governors not to allow foreigners who resided in the islands to engage in commerce, nor under any pretext whatever to settle in the provinces or towns, or in any locality in the Philippine Islands.

The Chinese were the only foreigners who, notwithstanding the many difficulties thrown in their way and the restrictions to which they were subjected by the laws and the conduct of the officials, succeeded in extending their business operations and in living even in the remotest corners of the archipelago. They never remained idle, but engaged in trade on a small scale, and their activity served to leaven the general mass of inertness; they were abused by the natives and were protected by the authorities to whom they rendered services and whom they attempted to please in every way. As regards the Spaniards, one of the Laws of the Indies strictly prohibited them from living in any Indian town, even though they bought lands; and even when a Spaniard traveled he was not allowed to remain in any one locality more than two days.

The laws compelled the encomenderos to instruct their slaves in the faith, in case there was no priest or friar at hand, and to instruct them also in reading and writing. The priests and friars were obliged to teach these branches free of charge, and to the extent of teaching the Christian doctrine they complied faithfully with the law, and in addi-

tion taught their flocks certain arts and trades, for which the Filipinos showed much aptitude.

Under the direction of the friars, printing presses were first used in Manila in 1593, and soon thereafter other presses were installed in the monasteries under the charge of the Jesuits, Dominicans, Franciscans, and Augustinians; among the workmen were Filipinos, who also learned to be good engravers. For the purpose of providing ornaments and altar pieces for their temples the missionaries required the aid of sculptors, silversmiths, and other artisans. Natives were soon educated in these various trades by members of the religious orders and attained such proficiency that their ability was soon recognized as being far above the average. Musicians, both instrumental and vocal, for the church choirs were also instructed and developed, and women soon became very proficient in the art of embroidery on domestic cloth as well as on piña and on fabrics brought from China, such as silk and velvet.

All of the stone buildings were erected, under the direction of members of the religious orders, by Indian workmen, who also showed remarkable ability as naval constructors, on which lines since the first days of the conquest the Spaniards had been diligently employed.

The pleasant life which was enjoyed in the newly formed towns by the encomenderos and the members of the religious orders was very attractive to the indigenes. Around the churches and the monasteries were grouped the residences of the leading people, whose authority received the moral support of the curate. The *cabezas de barangay* (chiefs of the tribes) maintained their authority and directed the affairs of the people, as in the olden times. The Spanish laws not only did not conflict with, but on the contrary protected the Filipinos in all of their customs and government which were not contrary to the teachings of the Christian religion. The method adopted for the colonization was to teach the people the Christian religion, to force them to accept it, and to respect its representatives, without discussion, investigation, or suspicion.

All of the laws and all of the regulations for their enforcement were issued with the object of giving to the religious orders the greatest possible prestige, and the King relied on the ministers of the faith to act always from purely religious motives.

These laws, while they protected the Indians, also forced them to a condition of perpetual tutelage—to the eternal condition of minors. In their lawsuits between themselves judgment was passed by their own native authorities; but when one party to a suit was a Spaniard, or when a native was in any way injured in his rights by a Spaniard, the suit was prosecuted under the direction of the *Protector de los Indios* (protector of the Indians), of the encomendero, or the local

curate, according to the requirements of each case. In this manner the Spanish prestige was preserved, inasmuch as it was no longer an Indian who asked for the punishment of one belonging to a superior race, but a Spaniard who took up the Indian's cause and conducted the suit against another Spaniard.

The Filipinos became accustomed to following the advice of the curates, who educated them to a complete subjection of personal opinion and who dominated their consciences through promises of heaven or fear of everlasting punishment when they died. In the contest for authority between the encomenderos and the friars the latter gained their object, and from that time the friars were the only Spaniards in the Philippine towns who exercised temporal power derived from the King and authority in spiritual matters derived from the church.

As the native customs of the Indians became modified and their natures more gentle the wealth and splendor of the religious ceremonies in the churches attracted them greatly. All of their ancient fears of the mysterious and occult powers which were supposed to bring ill health or misfortune, to reward with victories or punish with defeats, were preserved by these people. The only change in their religious beliefs was in the personnel of the spirits who governed the affairs of life and phenomena of nature. The patron saints, whose protection they now asked, merely supplanted the ancient anitos of their ancestors, who in their former idolatry had intervened in all of the affairs of life. They were simple souls, and by nature credulous, timid, and easily led, unable to act on their own judgment and constantly directed by the monks of the new religion which they had adopted, in whom they had absolute faith and whom they both feared and respected.

The character of the Filipino, developed on these lines, was exactly what could have been expected from the paternalistic legislation and from the teachings of the church sifted through the character of its representatives in these islands. The priests and friars had taught the natives reading and writing in order that they might understand the tracts and other matter which were published in the local dialects, and which constituted the only kind of literature allowed to be read. These tracts were mostly novenas and lives of the saints, which in themselves could not be considered as objectionable; but the education thus provided was calculated to extend and perpetuate the power of the friars, to provide them with the means to enforce obedience and maintain themselves as the directors and censors of the conscience and sentiments of the people.

In 1601 the College of San José was founded in Manila by the Jesuits. In 1619 the College of Santo Tomás was founded by the

Dominicans, who in 1640 also founded the College of San Juan de Letran. These institutions were founded for the purpose of providing for the education of the children of the Spaniards; among other branches taught were latin, philosophy, and theology. Later the colleges of Santo Tomás and San José were merged into a university, and a law course was added to the other branches. In 1714 the Spanish Government established a university in Manila for the teaching of ecclesiastical Roman and Spanish laws, and attached to the same was a medical school and a department where courses were given in mathematics. In 1730 the university was closed.

As has already been stated, the primary branches were taught by the members of the religious orders and were subject to orders and decrees which were issued in an irregular manner, but in 1863 there were organized classes of higher instruction and, according to the plans adopted, there should have been established in each town a school for the teaching of the primary branches. In Manila the University of Santo Tomás added to its other courses one for the instruction of notaries public, a medical course, and a course in pharmacy; there was a normal school established in Manila, under the direction of the Jesuits, and in the capitals of some of the provinces were opened schools where secondary courses were taught to both sexes. After the universities were established, at the beginning of the seventeenth century, some Filipinos obtained degrees as doctors or licentiates in law and theology, and from that time on there were both lawyers and doctors of divinity of the different races, and among them were some who reached considerable eminence in their time.

From the first days of the Spanish sovereignty until its final termination the object of all teaching appeared to be to avoid anything that was not genuinely Spanish and absolutely accepted by the traditional orthodoxy of the Catholic church. It was taught that the Spanish civilization was the best, that the religious teachings of the Spanish school were the only worthy ones, and that all modern ideas were to be condemned. All experimental science and all advances of the human mind in the line of independent thinking, which disregarded tradition and the influence of religious and empirical forms, were also anathema.

The Filipino civilization, bound up as it was by innumerable conventionalities, was evolved under the influences of intolerance which prohibited free thought and delivered the individual to the Spanish functionary to attain prosperity if he could while on earth, and to the absolute control of the Spanish priest to secure salvation in the future life, and so it continued until the end of the nineteenth century. Fortunately, however, early in that century certain events modified this condition of affairs. The opening of the ports in the archipelago to foreign commerce and the opening of the Suez canal, with the

facilities thus provided for communication with the rest of the world, dispelled to some extent the atmosphere of the middle ages in which the people of the Philippine Islands were wrapped, and modern ideas of liberty began to penetrate the minds of the natives. The emigration of natives to foreign countries, the arrival in Manila of Spaniards whose point of view had been changed by the teachings of the French Revolution, and the democratic influences which emanated from the United States, contributed to remove from the minds of certain Filipinos the pernicious and false ideas regarding human rights which up to that time had dominated most of those educated in the old methods.

Although the laws recognized no difference between the various races, nevertheless from the beginning of the nineteenth century the Spaniards claimed superiority over the Filipinos, and so taught their children. On the other hand, the Filipinos did not participate in the government of their own country; it is true that some of them at times occupied positions of importance, but these exceptions were so rare that they merely served to emphasize the fact that the automatic machinery of government was a thing apart and of which the natives served merely as adjuncts. In the towns the municipal functionaries had no choice except to convey to the people, and make them comply with the orders of the civil and military authorities of Spain, and especially with the wishes of the local curate.

The townspeople were obliged to remove their hats when a Spaniard passed, and this was especially the case if he occupied some official position; if the Spaniard happened to be a priest, in addition to the removal of the hat the native was obliged to kiss his hand. No Indian was allowed to sit at the same table with a Spaniard, even though the Spaniard was a guest in the Indian's house. The Spaniards addressed the Filipinos by the pronoun "thou," and although many of the Spaniards married pure blood native women, the wives were always looked down on in society as belonging to an inferior class. From the beginning of the nineteenth century the laws abolished all race distinctions, but this distinction could not be abolished from the actual customs which obtained, and the racial friction or ill feeling increased in proportion to the increased education of the Filipino people, and to the greater influence which the contemporary happenings in Europe had on the minds of the natives.

The favorite weapon used by the friars, for purposes of chastisement, was the whip, the municipal officers acting as the servitors of the local curate. By a decree, issued in 1696, it was ordered that no Indian should be paid in advance any sum greater than five dollars, no matter what the occasion or necessity for such payment might be; the payment in advance for rice or other products which were to be delivered later was also prohibited, and anyone who made an advance

of or gave credit to an Indian for a sum greater than five dollars was by law subject to the loss of the amount advanced or credited. While it is true that the royal instruction recommended that the Indians should be encouraged to work, the actual results obtained were that work was discouraged and a premium put on idleness and vice. In addition to Sundays, there were observed throughout the islands during the year thirty-two other holidays, and to these were added the patron saint's day of each town, whose feast was specially celebrated for a term of nine days; in addition, each barrio, or ward, had its special patron saint and the feast in its honor lasted three days. Besides all these the local curate, the alcalde of the province, and other officials had their particular saint's day, and for these and other reasons there never was lack of some excuse to quit work for the purpose of doing honor to some saint or some official.

Advantage was taken of the Filipino preference for cock fights as a method of producing income. Lotteries were encouraged and run under government auspices. In this manner laziness became the rule with those who placed their hopes on making a livelihood or obtaining a fortune without the necessity of working.

The sons of the friars were the leaders of the unruly element in the various towns and were the ones who commenced the movement against the power of the monks. When about the middle of the nineteenth century permission was granted to the Spaniards to live in the various towns and the number of Spanish officials had increased, the Filipinos took their cue from their Spanish neighbors and, having lost respect for the friars, showed it in their actions. The natives, although they feared the power of the friars, nevertheless, owing to racial temperament, aspired to relieve themselves from the tutelage under which they had lived and did not attempt to conceal the little respect they felt for the members of the religious orders.

The censor of the press held the papers published in the Philippine Islands within the strictest limits as regarded their editorial utterances. They were not allowed to publish items which might incommode any functionary; nor were they allowed to discuss political matters or even to refer to them. They were allowed only to publish items of news, happenings on the streets or in public places, and to copy articles referring to foreign occurrences published in the European exchanges. The censor of religious matters was even more strict (or orthodox) in blue penciling copy which passed through his hands on the way to the printer. Spanish publications, when they arrived in Manila, met with an insurmountable barrier in the *junta de censura* (board of censors). No Filipino was allowed to meddle in public matters, nor was he allowed to express an opinion regarding politics or the manner of the local administration of affairs in his country.

All Filipinos were obliged to belong to the Roman Catholic Apostolic faith. They were also obliged to believe and maintain that "the Philippine Islands belong entirely to Spain and are identified in everything with Spain." To attain this object, that is, to make Filipinos act and think in harmony with these ideas, the entire work of civilization was directed. This perforce created a national character which was humble, patient, uncomplaining, and weak.

There were other causes for which the Spaniards were not responsible, but which were largely due to the acts of the friars, and which created in the minds and hearts of many of the natives an unquenchable desire to change the order of things. This yearning no power, however strong, and no plan, however well devised, has ever been able to stamp out when it has once taken root.

From the time that the American Army entered Manila, on August 13, 1898, the activities of the members of religious orders have been limited to religious affairs.

By an act of Congress the people of the Philippine Islands are guaranteed freedom of thought, separation of church and state, liberty to assemble, and freedom of the press. In thus assuming sovereignty over the Philippine Islands the American people do not intend to extinguish the love of country in the hearts of the Filipinos and the inhabitants of these islands are given the right to call themselves citizens of the Philippine Islands.

The American nation has bound itself in honor to assist the Filipino people under its care, direction, and responsibility to reach the highest degree attainable of culture and civilization. Every Filipino can and should work for the benefit of his country and to secure its future well-being.

There are now no laws making racial distinctions, and throughout the entire archipelago are American teachers, both men and women, teaching English and in charge of the schools where the primary and secondary branches are taught. Normal schools also have been established and are well attended by a large number of pupils of both sexes and of all ages, who show great enthusiasm in their studies; and a law has been enacted by which Filipino students are sent each year to the United States to be educated in such professions or trades as they may select.

The government of the Philippine Islands, inspired by those free and democratic principles which have made of the American people a great, strong, and happy nation, is heart whole in its desire for the establishment of an upright administration of justice, an honorable expenditure of the public funds, an efficient organization of schools, and a system of public education which shall mold the character of the Filipino people in accordance with the modern standards of civilization.

THE POWER OF THE MONASTIC ORDERS.

In view of the fact that the principal object of the kings of Spain in making the conquests of new territories was to extend the Catholic faith, it is easy to understand the pains which those monarchs took in sending missionaries to the Philippine Islands. The Franciscan, Augustinian, Dominican, and Recoleto friars and the Jesuits came to Manila in the first days of the Spanish dominion to preach their doctrine and to convert the natives. When the ecclesiastical administration of the various towns was first organized it was necessary to select priests, but the friars, because of their vows, their obligations to live in monasteries, and the prohibitions they were under regarding the possession of property, were disqualified from acting as curates in the various towns. For this reason missionaries were so few that the Pope removed the impediments or disqualifications and permitted the monks and Jesuits to live outside of their monasteries and to act as curates in the same manner as the secular clergy; but this exemption was of a temporary nature and it was provided that it should only be in force until a sufficient number of the secular clergy could be obtained.

In order to prevent friction and conflicts between the various orders, the King directed that a specified scope of territory should be given to each order for the purpose of establishing missions. It being the object of the King to give a religious character to the colonization undertaken by Spain in the Philippine Islands, in accordance with the spirit which then dominated the Spanish nation, where the priestly power was paramount, it is easy to understand why the commercial life of the colony, which, until the beginning of the nineteenth century, depended entirely on the nao running between Acapulco and Manila, should have assumed a position of secondary importance as compared with the religious institutions and the prominence given to them both in Spain and in the colony.

History makes the friars responsible for the errors committed by the Spanish Government in these islands, but it would appear that without the aid of the religious orders it would have been impossible for Spain to have fulfilled, even to the extent she has, her promises of civilizing the Filipinos and of helping them to advance along the lines marked out by the European nations. It is impossible not to recognize the humanitarian impulses, truly Christian and equitable, which guided the kings and the Spanish legislators in what they did for the Philippine Islands. It is also certain that the Spanish colonial legislation, influenced as it was by the opinions of persons so conservative and suspicious of all that was not Spanish and Catholic in its nature, shut the Philippine Islands off from all contact with other civilization. These islands, therefore, were jealously watched over by

a system of government which itself could not create citizens capable of constituting an independent people able to enjoy the benefits of civilization known in other countries; but this result was not due to a system of politics created specially to suit a colony, but was more in the nature of a reproduction in the Philippine Islands of the same political system under which Spain was governed and known to the other nations of Europe. The friars have been made to bear the brunt of many shortcomings, but if the other officials of the Spanish Government had complied with their duties, even to the extent to which the friars complied with theirs, it is certain that history to-day would shift that burden of responsibility to other shoulders; the friars undoubtedly were responsible for many things, but they also should be credited with the attainment of certain results in the civilization of the Filipino people, the credit for which is now denied them.

The King of Spain paid the expenses of every emigrant friar from Spain to Mexico and from there to Manila. These missionaries were also furnished clothing, breviaries, and missals, and it was estimated that the average expense attending the bringing of each missionary to Manila was about 600 pesos. The doctrinarians, as the curates were called, received in the year 1588 a salary of 100 pesos per annum, to which was added 100 *fanegas*—equal to about 300 bushels of rice—and such ornaments and decorations as were needed for the altars in the churches. As these missionaries had taken the vow of poverty—and in reality they were poor—they relied on charity for the wine and oil used in celebrating their religious rites. When the missionaries first arrived in the various towns they protected the Indians against the abuses committed by the encomenderos; the latter, probably in spite, made counter accusations, and in the year 1582 they succeeded in obtaining an order prohibiting the curates from making servants of the members of their flock. The friars were very much irritated at this order and the Augustinians asked permission of the King to withdraw from the islands. The King was alarmed and wrote to the governor to cooperate with the friars, and this order increased the dissatisfaction of the encomenderos. About this time also arose another complicated question which was never decided during the entire Spanish régime in the Philippine Islands; the friars denied the authority over them of the bishop of the diocese and claimed that they were obliged to obey only the provincial superior of their religious order.

The King was in constant receipt of complaints against the missionaries, in which they were charged with specific abuses, and he attempted, by royal decrees and other writs addressed to the bishops, to prevent a repetition of the offenses complained of. Among other things, he requested that the missionaries be prohibited from influ-

encing men on their deathbeds to will their personal goods to the clergy, thus disinheriting their children; that the clergy should be prohibited from obliging the Indian widows and single women to enter their domestic service under pretext of learning the Christian doctrine; that the clergy should be prohibited from charging the Indians fees for administering the sacrament; that those of the clergy who were engaged in the sale and barter of members of their own flock should be severely punished; and that steps should be taken to prevent the repetition of these and other well-known offenses.

In the same manner as the civil employees failed to fulfill the provisions of the royal decrees, the members of the religious orders also did as best suited their own interests, relying on the influence of their orders to secure them immunity from any disagreeable results. In this manner the importance of the church in the colonies became greater day by day.

The power of the friars in Manila soon became very great. At the start they were poor, but certain devotees made them donations, others left them inheritances consisting of lands and slaves, and in a short time the friars had become wealthy proprietors and independent of their own holdings for their sustenance, which was furnished by alms and gifts made to them by the King and by the followers of their church. Their territorial possessions increased rapidly; so much so that in 1601 the King commissioned the Auditor Sierra to compile data and send him a report as to the kind of titles and areas and description of the valuable lands held by the friars; but the friars refused to furnish any information to the auditor, stating that they were exempt from any such formalities, and as subsequently they were unable to prove the legality of their titles they were declared to be "occupants in bad faith" and an embargo was laid on the lands held by them. When Archbishop Camacho arrived in the islands the friars appealed to him for protection, and this prelate ordered the auditor to stop his proceedings or he would excommunicate him. Taking advantage of this crisis, as they also did on other occasions, the friars threatened to abandon the islands, and the governor, in order to avoid a conflict, which had taken on alarming proportions, got the new *visitador* who had succeeded Sierra to accept the titles to the lands held by the friars as valid; and when this was done the matter was pigeonholed.

When, in the year 1653, Archbishop Poolete, of Manila, attempted to enforce the order of Pope Urban VIII to subject the friars to the authority of the bishops, the members of the various monastic orders opposed a determined front to the proposed innovation, and all of the curates resigned their positions. The same thing happened when Archbishop Camacho attempted to enforce the order of the head of the church, and it was of this prelate that the King, in a royal cédula

dated February 17, 1705, said he "was subjected to many humiliations, especially at the hands of certain *predicadores* (preachers) of the religious orders." The friars stirred up so much opposition against Archbishop Camacho that the governor, fearing an insurrection, begged the archbishop to let the friars do as they chose. The archbishop was finally obliged to desist from his attempt, and nothing was done thereafter.

In 1668 Governor Salcedo had certain disagreements with the friars and with the archbishop, and a program of revenge was formed, in which certain members of the religious orders, army officers, regidores, and merchants constituted the personnel of the cabal. It was proposed to denounce the governor to the Inquisition. The method of procedure was soon agreed upon, and one night, while the governor was asleep, the conspirators entered his room and, before he was aware of their object, he was securely handcuffed and taken to the monastery of San Francisco. This prison not being considered sufficiently secure, he was subsequently transferred to the monastery of San Agustín, where he was put in a cell and made secure with a heavy chain. Among the conspirators who kidnapped the governor was the provincial head of the Franciscans and other members of the ecclesiastical orders in Manila.

Archbishop Pardo, a Dominican friar, had been furnished with over twenty royal orders which he had failed to enforce, and for this reason it was decided by the audiencia to get rid of him; he was, therefore, shipped to Lingayén.

On another occasion the members of the Recoleto friars disagreed among themselves to such an extent that a number of them, composed of Spaniards from the province of Castile, seceded from the main body and removed to the monastery of Bagumbayan. Both sides appealed the matter to Madrid, but when the decision rendered was received in Manila the friars, who had taken up their residence at Bagumbayan, refused to move out of the monastery, as they were ordered to do by the Spanish court; the governor thereupon proceeded to bombard the monastery and kept it up until they capitulated and moved away.

Another still more serious event occurred in 1719, when the friars led a mob, which they had organized, against the palace of Governor Bustamante. The governor was assassinated and the crime was never punished.

Between 1744 and 1753 the Pope issued no less than four bulls in which the friars who acted as curates were put within the jurisdiction and under the authority of the bishop, and the King, Ferdinand VI, also gave strict instructions to the effect that the orders of the Pope should be enforced in the Philippine Islands; but neither the bulls

nor the royal orders were of any avail, and the friars defied both the King and the Pope and threatened to abandon their pastorates. The heads of the four monastic orders in Spain decided not to send any more friars to the Philippine Islands, and for lack of priests to supply the parochial needs the archbishop was obliged to suspend indefinitely the enforcement of the papal bulls.

Notwithstanding all of these vain attempts to subject the friars to higher authority, the Archbishop of Manila, Santa Justa y Rufina, between the years 1767 and 1787, again attempted to make the friars respect his authority. Referring to the unequal fight which was then taken up, the archbishop wrote to the King that "when the order for obliging the friars to submit to their superiors is put in effect they will threaten to abandon all of the parishes under their charge in these islands, and rather than bring about that result it would be preferable to let the present bad state of affairs continue. These caprices of theirs are of too long standing and will not easily be abandoned." A century later, in 1865, the archbishop of Manila, together with the bishops of Cebú and Nueva Cáceres, presented a joint complaint to the governor, in which were again denounced the abuses committed by the friars, which had been tolerated for three centuries, from the time of Salazar to Santa Justa. But it was all in vain, as the bishop declared "the friars who acted as curates were almost sure of immunity; they relied on their office to shield them from punishment, and made it obligatory for their ecclesiastical superiors, who desired to avoid scandal, to submit to defeat, to stomach the insults heaped upon them, and to continue in the ministry persons who were not up to the standards of their holy missions."

The power of the church was thus monopolized for the benefit of the friars, and it was a common thing for the bishops to call attention to the fact that the papal bulls and the cédulas of the King were alike ignored—and such was indeed the case whenever the provincial heads of the four monastic orders in Manila set their veto on the bulls or cédulas. Such was the position occupied by the friars within their own church.

The financial affairs of the friars were very soon in a flourishing condition. Each community had its plantation in the country and its city property, and was interested in the commerce carried on between Manila and Acapulco. Each friar who acted as a curate had everything provided for him, and the rentals from his properties, in some cases, were from 8,000 to 20,000 pesos a year. In addition to all this they received other emoluments or concessions from the Crown, which had been allowed them during the time of their pastorate. Governor Anda complained to the King regarding the abuse of power on the part of the friars in the provinces where the alcaldes were given

subordinate positions. It appears that the friars, when an alcalde did not obey their dictum, were able to secure his discharge from office.

The Jesuits, who were wealthy, intelligent, and powerful, had often been an obstacle to the ambitions of the friars, but their expulsion left the friars absolute masters of the situation.

In 1820, when the natives of Manila assassinated the foreigners, whom they accused of poisoning the water supply and bringing about an epidemic of cholera, until then unknown in these islands, it was the opinion of the public at large that the friars were the ones who had excited the people to rise against the foreigners, of whose advanced views the friars were intolerant.

In the courts where the matter was investigated it was ascertained that the accusation made against the friars was founded on fact.

The Spanish Government from day to day bolstered up the power of the friars in the Philippine Islands and conceded to them more and more the right to intervene in matters of state. If a report was made by the municipal authority regarding the conduct of any person, it had to be viséed by the local curate, whose signature was also necessary to the lists of natives drafted in the local militias, the financial reports, and other official documents of the various municipalities, and without which these documents were not valid. The friars were also the inspectors of public instruction, and the teachers were subjected absolutely to their control and direction. In Manila there was only one university, and the friars were in charge. The provincial heads of the various communities were admitted as members of the *junta de autoridades* (board of authorities), and finally, His Majesty gave authority to the friars to sell or barter their lands and other properties. Hitherto the friars had held the lands without the right to sell or dispose of them in any manner without permission from the King, who always considered the properties of the religious orders as belonging to the state, and that the friars were to be allowed to enjoy the usufruct of such properties as long as they were priests of a religion which was considered as an integral part of the state.

The friars who were sent to the Philippine Islands were supplied by the various monasteries of the respective religious orders in Spain. By the terms of various royal decrees foreign priests were prohibited from coming to these islands; all of the members of the clergy had to be Spaniards. In Manila each one of the religious orders had a monastery, which was under the charge of a provincial, who was the head of the order, and who was assisted in his administration by a council. The representative of each religious order in Madrid was a *procurador* (friar), who was elected in Manila, received a good salary, and dealt directly with the King and his ministers regarding the matters of the religious corporations in the Philippine Islands.

In the head monastery in Manila there was also a *procurador-general*, who was in charge of the management of the funds of the religious corporation, kept the accounts of each parish priest belonging to the order, and acted as the representative of the order in all financial transactions and in its civil suits in court.

Of the 850 municipalities into which the archipelago was divided, 670 were in the power of the monks, leaving 180 municipalities under the administration of the Jesuits and clericals of other orders.[1] There were in addition, in some of the larger towns, large numbers of friars who served the various churches; in the monasteries and convents in Manila there was a large number of resident friars engaged in teaching the various branches of learning, in theological studies, and administering the various branches of the religious corporations.

Although the large territorial holdings of the religious orders were claimed as the legitimate property of the friars, the Filipinos did not recognize their title to such property. It is argued that these lands were obtained illegally, and if the title thereto was registered it was due to the fact of the absolute power the friars enjoyed under the Spanish sovereignty, and that, abusing that power, they disregarded the rights of the real owners of these lands. By act of Congress the insular government was authorized to purchase these lands from the friars for the purpose of resale to the actual residents.[2]

Having lost the support of the government the power of the monastic orders has been completely destroyed in the Philippine Islands.

COMMERCE AND REVENUES.

It was natural that the products most prized by the Spaniards in the lands they discovered were gold, silver, and spices, and among the latter particularly cloves, pepper, nutmegs, and cinnamon. These articles either were not indigenous to the Philippine Islands, or, if found, the product was limited and unprofitable. The Portuguese brought spices from their islands; Chinamen imported them, stored them temporarily in Manila, and subsequently exported them to Mexico.

From time immemorial the Chinese and Japanese merchants had traded with the Filipinos, but the traffic was no doubt limited, due to the pirates who infested the seas in this locality. The arrival of the

[1] The friars were not only parish priests, or spiritual guides, but in effect were rulers of the municipalities; in fact, the whole government of the islands rested on them. Consequently every abuse of the many which led to the revolution of 1896–1898 was charged to them by the people. According to the church records in Manila there were in 1898, 6,559,998 Catholics in the Philippines, and to care for them there were 746 regular parishes, 105 mission parishes, 116 missions, 346 Augustinian friars, 107 Franciscans, 233 Dominicans, 327 Recoletos, 42 Jesuits, 16 Capuchins, and 6 Benedictines. The total number of friars January 1, 1904, was 246.—*Director.*

[2] The joint landholdings of the four orders of friars amounted in 1898 to 420,000 acres, 410,000 acres of which have been sold to the insular government for $7,239,000 gold.—*Director.*

Spaniards, however, gave considerable impetus to the development of commerce with China. Hardly had Manila been established—June 3, 1571—when a ship arrived from the Chinese Empire bringing considerable quantities of silks, porcelain, gunpowder, mercury, pepper, cloves, cinnamon, sugar, iron, copper, lead, wax, lime, and, according to certain legends, the images of saints, and crucifixes and other articles used in Europe. In subsequent years the importations from China increased considerably. Junks and other small craft arrived during the northeast monsoons and returned to China when the trade winds were favorable.

The commerce carried on with China was countenanced or authorized by the colonial governors, and, although the Spanish Government at first objected to such traffic, a royal cédula was issued in 1609 permitting the Filipinos to engage in trade with China and Japan.[1] Inasmuch as the colony had no merchant marine, no ships were sent out from these islands, but the arrival of the Chinese and Japanese boats, during the favorable seasons, was eagerly awaited in Manila. Governor Pérez Dasmariñas issued an order that all of the merchandise imported in each *sampan* or other craft from China should be appraised in bulk by an official named by the governor, and the imported goods were then divided pro rata among the Spanish residents in Manila. This operation was called "*la pancada*."[2]

The Chinese goods which were then brought to Manila were very cheap, and for many years constituted the only articles sent from the Philippine Islands to Mexico, Guatemala, Panama, and Peru. Cloves, from the exportation of which good profits could have been obtained, could not be exported to America, due to certain prohibitions contained in royal decrees, except in such small quantities as were considered necessary to supply the consumption in Mexico.

On the other hand, no European nation was able to engage in commerce with the Philippine Islands; but, inasmuch as ships from Siam and India were allowed to enter Philippine harbors, it was an easy matter for the Dutch, English, and even French merchants to come to Manila and import their goods, after previously taking the precaution to put an Asiatic in command as captain of their ship.

[1] The policy of the early Spanish governors was to encourage this trade. Between 1580 and 1583 a Parian, or market place, was built for the Chinese in Manila, to which they were permitted to bring their merchandise for sale. This occurred during the governorship of Ronquillo, who established and collected import and export duties on foreign commerce. De Morga says: "He imposed 2 per cent duty on merchandise embarked for New Spain and 3 per cent on the goods imported by the Chinese to the Philippines, and although this was disapproved of and blamed for having been done without orders from His Majesty, these duties continued to be imposed and established thenceforward." Prof. Carl C. Plehn is authority for the statement that a custom-house had been established in Manila in September, 1573, but there is no record of the collection of duties prior to those imposed by Peñalosa.—*Director.*

[2] *Pancada*, a contract for the distribution of goods by wholesale.—*Director.*

New Spain, Peru, and other Spanish possessions in the Americas were specifically prohibited from engaging in commerce with China and with the Philippine Islands up to the years 1591 and 1593, when orders were issued allowing a limited commercial intercourse between those countries and the Eastern Hemisphere. As a special act of grace to the residents of Manila, the royal cédula of 1593 allowed this city to send Asiatic goods to New Spain, but the owners of the exported goods must accompany them to their destination, and under no circumstances were the goods to be sent consigned to people living in Mexico. In addition, Manila was prohibited from sending to Acapulco more than one ship a year, not to exceed 300 tons burden, and the cargo of which should not exceed in value 250,000 pesos. The royal cédula also provided that on its return trip from Acapulco the ship should not bring to the Philippine Islands a greater sum of money than 500,000 pesos. No one could bring in, directly or indirectly, from Acapulco silver bullion in any form; this was done to prevent the merchants from exceeding the 500,000-peso limit. Before an immigrant could bring his own money into the Philippine Islands he had to file a bond guaranteeing that he would reside in these islands for a term of not less than eight years.

These tyrannical provisions of law were not complied with. As a matter of fact, Manila exported to Acapulco all the goods available, and the naos brought back to the Philippine Islands all the money that anyone cared to send.

The sum of 500,000 pesos, mentioned above, which could legally be imported from Mexico, represented not only the profit derived from the sale of the articles exported from Manila, but also included what was called *el situado*, which represented the funds sent by the King to the colony to pay the costs of the local administration.[1]

The merchants of Cádiz and Seville had a monopoly of the commerce with America and therefore did not look with favor on the trade in silks and Chinese products which was being built up between Manila and the New World, inasmuch as a certain amount of competition was necessarily waged against Spanish commerce. It was due to the complaints and the clamor of the Spanish merchants that the King decided to issue the cédula, imposing the restrictions on commerce mentioned above; the Spanish merchants did not cease to

[1] The share of the taxes (or tribute) pertaining to the Government and collected from the natives was paid largely, at first wholly, in the products of the country. These products were accumulated in the Government storehouse at Manila, and subsequently exchanged for the benefit of the royal treasury for goods brought to Manila by oriental traders. The Chinese, Indian, and other wares thus obtained were packed each year in exactly fifteen hundred bales of equal size and shape, and shipped in the Government galleon to Mexico. This remittance made up in part the annual allowance or subsidy called the "real situado;" if the sale of the goods thus shipped from Manila did not realize a sufficient amount to cover the subsidy, a sum equal to the deficiency was added to the proceeds of the cargo.—*Director.*

petition the court, and in the year 1604 the royal cédula of 1593 was republished, and all of the prohibitions and restrictions on the commerce between these islands and New Spain were reiterated. In compliance with this new mandate the governor of the Philippine Islands, in the year 1605, began to enforce the provisions of the royal cédula of 1593.

For the purpose of distributing the cargo placed aboard the nao which yearly sailed to Acapulco, the governor prescribed regulations as follows: The ship's hold was divided into a certain number of spaces called *boletas*, and each space was supposed to contain a package of merchandise of given dimensions; the spaces were more or less than 1,500 in number, and were subdivided into three or six parts, and many persons were able to secure only one or more such subdivisions; as an indispensable prerequisite, exporters had to prove that they were members of the *consulado* (tribunal of commerce) and that, together with the other members of that corporation, they had contributed their share to the 20,000 pesos which were paid to the captain of the nao for each round trip. Spaces aboard these naos were also allotted to certain of the officials, to widows in indigent condition, and to other beneficiaries, but most of these persons not being in possession of the goods for export, or because they were not members of the consulado, were in the habit of selling their rights to others who were able to engage in the export trade.[1]

When the merchants needed funds they borrowed them of the *obras pías* (charitable institutions), the profits from the transactions of which

[1] Tomás de Comyn in his work, "The State of the Philippine Islands," written near the close of the period when the commercial restrictions were in force, says: "Scarcely will it be believed in the greater part of civilized Europe that a Spanish colony exists between Asia and America whose merchants are forbidden to avail themselves of their advantageous situation, and that as a special favor only are they allowed to send their effects to Mexico once a year, but under the following restrictions: It is a necessary condition that every shipper shall be a member of the board of trade, and therein entitled to a vote, which supposes a residence of some years in the country, besides the possession of property of his own to the amount of $8,000. He is compelled to join with the other members in order to be enabled to ship his goods in bales of a determined form and dimensions, in one single vessel, arranged, fitted out, and commanded by officers of the royal navy, under the character of a man-of-war. He has also to contribute his proportion of $20,000, which, in the form of a present, is given to the commander at the end of every round voyage. He can not in any way interfere in the choice or qualities of the vessel, notwithstanding his property is to be adventured in her; and what completes the extravagance of the system is, that before anything is done he must pay down 25 to 40 per cent for freight, according to circumstances, which money is distributed among certain canons, aldermen, subalterns of the army, and widows of Spaniards, to whom a given number of tickets or certified permits to ship are granted, either as a compensation for the smallness of their pay or in the way of a privilege; but on express condition that, although they themselves are not members of the board of trade they shall not be allowed to negotiate and transfer them to persons not having that quality. In the custom-house no tickets being given, unless the number of bales to be shipped are accompanied by the corresponding permits, and as it frequently happens that there is a degree of competition among the parties seeking to try their fortune in this way, the original holders of the permits very often hang back in such manner that I have seen $500 offered for the transfer of a right to ship three bales, which scarcely contained goods to the amount of $1,000."—*Director.*

were used to care for orphans, to endow hospitals, and for certain educational purposes. Inasmuch as the naos were seldom seaworthy for such long trips, maritime disasters were common occurrences both on the outward and homeward bound trips, and the charitable institutions at times suffered such losses that were it not for the exorbitant rates of interest they charged on money advanced to exporters they would have been forced into bankruptcy. But as these institutions had the foresight to establish an enormous sinking fund they were able to survive almost any loss which they suffered on the high seas.

In order to be able to export goods to a greater value than the 250,000-pesos limit, the exporters undervalued their goods, and the same system was adopted in the valuation of the silver bullion brought from Mexico. This gave rise to the perpetration of frauds to a considerable extent. On the return trip the naos were loaded with all the silver they could bring, and the ships being of flimsy construction the extra amount of cargo added greatly to the dangers to which they were exposed.

In 1635 the Spanish merchants sent a ship to Manila for the object of investigating the frauds perpetrated in the trade which was carried on with Acapulco; as a result of this visit the Government adopted strict measures to enforce compliance with the royal mandates. When the usual amount of exchange medium imported from Acapulco was forced down to the 500,000-pesos annual limit, the merchants engaged in importing Chinese goods found themselves without the necessary medium of exchange for the payments due by them to the Chinamen, and as a necessary sequel the Chinamen quit bringing goods to the Philippine Islands and there was nothing to export to Acapulco. In 1639 the enforcement of the severe measures which had been adopted for preventing frauds in the trade with Acapulco was discontinued, and from that time the colony again began to thrive, or at least to get along better than when the law was strictly enforced.

The people living in Manila, of all classes, continued to petition the sovereign to grant more liberal concessions to the commerce of these islands, and finally, in the year 1702, the King ordered that goods to the amount of 300,000 pesos a year could be exported to Mexico and that money to the amount of 600,000 pesos could be brought back to Manila. But the merchants of Seville and Cádiz again clamored for protection, so that in 1718 an order was issued prohibiting the shipment from Manila to Acapulco of any Chinese silk, whether manufactured or unmanufactured. The viceroy of New Spain objected to the provisions of this royal cédula and wrote to Madrid, making clear the damage which it did to the colony, but the King refused to be convinced, and in the year 1720 the royal cédula was again published, with all of its previous prohibitions.

The merchants of Manila then sent a representative to Spain, who succeeded in securing the repeal of this unwise law, and in 1724 Manila exporters again began to send silks to Mexico. But commerce was harassed by orders and counter orders, some of which encouraged and others discouraged the export and import trade of these islands, until in the year 1734 it was definitely decreed that Manila should be allowed to engage in the export trade of Chinese silks, that exports to the value of 500,000 pesos could be sent annually to Mexico, and that silver to the value of 1,000,000 pesos could be imported annually from that country.

It was against these obstacles that the commerce of the colonies had to battle during two centuries. The islands were made subject to the same restrictions and inquisitorial methods which Spain applied to all of her colonies in America and which appear to have been the fruits of the economic ideas of that period in the mother country.

SHIPPING.

As soon as Legaspi had established himself in Manila he directed that a shipyard be provided for the careening of vessels and building of naos, which were the ships of war and the merchantmen in which were carried all of the imports and exports between the archipelago and Europe and America.

Competent engineers and shipbuilders were lacking, and therefore such ships as were built were defective and clumsy; they were from 1,200 to 1,500 tons burden, resembled frigates, and carried a battery on the upper deck. The fact that one of these ships crossed the ocean safely and arrived in port without a mishap was considered as a kind of miracle, and every time a nao arrived in the harbor the fact was celebrated officially, the church bells chimed, and a solemn Te Deum was chanted in the churches. Even though the naos were fortunate enough to escape the tempests on the high seas, their troubles were not over, as when they got closer to land they had to run the gantlet of the Dutch, Portuguese, and English pirates, who, during the first two centuries after the occupation of the Philippine Islands, infested the South seas and frequently visited Philippine waters.

The English corsair, Thomas Cavendish, in 1586 boarded and set fire to the nao *Santa Ana* near the California coast. As was the custom on these ships, they had removed the cannon from the deck and had stored them below in the hold. This was done to have more room on the deck, and the result was that the English met with no resistance whatever from the Spanish sailors on the nao.

In 1742 the English Admiral, Anson, captured the nao *Covadonga*, coming from Mexico, and having aboard the situado—the government funds. The capture was made near the Cape of the Holy Ghost, island

of Sámar. The Spaniards made a desperate resistance, but were obliged to capitulate, and Anson captured about 1,500,000 pesos. In 1762 the English corsair, Drake, captured the nao *Trinidad*, with a cargo valued at 2,000,000 pesos.

The custom was for the naos to leave Manila in July or August, expecting to arrive in Acapulco some time between December and February following; the return trip was made between March and June. Although as a general thing there was only one nao en route at any one time, another was held in reserve in Manila in order that commerce should not be interrupted in case any accident should happen to the other ship. The trip from Manila to Acapulco took from six to eight months. It was a common occurrence for the water and food supply to be exhausted, and the sufferings and hardships which the passengers and crew had to undergo made this journey a most disagreeable and perilous undertaking.

The cargo was taken aboard at Cavite, and before the ship left the harbor it returned to Manila, where a priest, who stationed himself on the sea wall, blessed the undertaking. The ship sailed through the Strait of San Bernardino, and once on the Pacific it steered in a northeasterly direction until it arrived at 30° north latitude, and from there on relied on the southeast trade winds to waft it to the California coast. From Manila to Acapulco no port was touched. It is a fact that at 40° or 45° north latitude the ships could have availed themselves of stronger winds and could have increased their speed; but the captains of these boats were strictly prohibited from going farther north than 30°, as it was feared that the nao, on account of its faulty construction, or the ignorance of the navigators aboard, and of the heavy cargo carried, would be in great risk of shipwreck. The return trip from Acapulco was made with greater speed, usually in about seventy days.

At the beginning the commander of the nao was given the title of *cabo*. He was appointed by the Governor of the Philippine Islands and was usually a person of some influence. The pilot, who was second in command, was the only person aboard who really understood anything about navigation. At a later date the naos carried aboard a general and an admiral, whose subordinates were the captain, lieutenant, sergeant and 10 soldiers, the pilot, the boatswain, and the clerk. Subsequently there were also added a chaplain, a surgeon, and other petty officers. The armed force aboard was also increased to 50 men. Strange to say, although these ships belonged to the King, when they arrived in Manila and were dismantled to await the next journey, the officers aboard took possession of all the fittings and furnishings of the ship except the artillery. It therefore became necessary to refit the nao every time she sailed; but this did

not mean that new articles were purchased, it being the custom to buy from the ship's officers all of the fittings and furnishings which they had removed from the ship when it arrived from its last trip. This distribution of the articles aboard the ship among the officers was called *gajes del oficio.*

Each passenger carried with him his own provisions and servants. The resulting disorder and agglomeration of people and personal effects and chattels of every kind on deck were almost indescribable. In 1788 the governor issued regulations for the carrying of cargoes, the loading and unloading of the ships, and the general organization and management aboard.[1]

Naos and other larger ships were also built in Tayabas, Pampanga, Mindoro, and in other ports in the archipelago, wherever a site could be selected on the seashore suitable for shipbuilding purposes, and adjacent to some forest from which the proper building timber could be obtained. Notwithstanding the fact that nothing was paid for the lumber used, the building of a nao cost anywhere from 100,000 to 130,000 pesos.

In order to defend the local shipping and coast towns from the pirates who infested the inland waters of the archipelago, as well as the pirates of the high seas who from time to time threatened the islands, *armadas* and *armadillas* (small squadrons or fleets) were

[1] In the historical introduction to "The Philippine Islands," by Blair and Robertson, Prof. Edward Gaylor Browne, quoting from the historians Le Gentil and Zuñiga, gives the following description of the use of the galleon:

"The Government reserved about 1,500 bales. The capacity of the vessel was measured, taking as a unit a bale about 2½ feet long, 16 inches broad, and 2 feet high. If, then, the vessel could carry 4,000 of these bales, each bale might be packed with goods up to a value of $125. The right to ship was known as a *boleta*, or ticket. The distribution of these tickets was determined at the town hall by a board made up of the governor, attorney-general, the dean of the *audiencia*, one *alcalde*, one *regidor*, and eight citizens.

"To facilitate the allotment and sale of tickets, they were divided into sixths. Tickets were ordinarily worth in the later eighteenth century in times of peace, $80 to $100, and in war time they rose to upward of $300. Le Gentil tells us that in 1766 they sold for $200 and more, and that the *galleon* that year went loaded beyond the limit. Each official, as the perquisite of his office, had tickets. The *regidores* and *alcaldes* had eight.

"The small holders who did not care to take a venture in the voyage, disposed of their tickets to merchants or speculators, who borrowed money, usually of the religious corporations, at 25 to 30 per cent per annum to buy them up, and who sometimes bought as many as two or three hundred. The command of the Acapulco galleon was the fattest office within the gift of the governor, who bestowed it upon 'whomsoever he desired to make happy for the commission,' and was equivalent to a gift of from $50,000 to $100,000. This was made up from commissions, part of the passage money of passengers, from the sale of the freight tickets, and from the gifts of the merchants. Captain Arguelles told Careri in 1696 that his commissions would amount to $25,000, and that in all he would make $40,000; that the pilot would clear $20,000 and the mates $9,000 each. The pay of the sailors was $350, of which $75 was advanced before the start. The merchants expected to clear 150 to 200 per cent. The passenger fare at the end of the eighteenth century was $1,000 for the voyage to Acapulco, which was the hardest, and $500 for the return. Careri's voyage to Acapulco lasted two hundred and four days. The ordinary time for the voyage to Manila was from seventy-five to ninety days."—*Director.*

fitted out. These fleets consisted of galleys and of old naos that had been used in the trade between Acapulco and Manila and of smaller craft of different kinds, all of which were built in these islands.

INSULAR TRADE.

In the year 1733 there was organized in Madrid the *Compañía de Filipinas*, which was granted the exclusive privilege and other concessions to trade with these islands, but this company never carried out the objects for which it was organized. An attempt had been made in Manila in 1771 to trade with the Asiatic ports. The frigate *Deseada* was in that year sent to the coast of Malabar. The result was not satisfactory and trade from then on continued to be carried in foreign bottoms. King Charles III ordered that direct communication should be established between Cádiz and Manila and that a frigate of war should be sent annually with a cargo of goods to the Philippine Islands with instructions to bring back a load of the products of these islands and Chinese merchandise.

The frigate *Buen Consejo* was the first to leave Cádiz on this mission. It rounded the Cape of Good Hope and arrived in Manila in 1765. These annual trips were continued from that date until 1783, in which year they were suppressed or discontinued.

In 1785 the King authorized the creation of another company called the *Real Compañía de Filipinas*, to which was given the monopoly of all navigation and commerce between the archipelago and Asiatic ports and Cádiz.[1] This company should not have interfered with the commerce between Manila and Acapulco, but nevertheless, owing to the

[1] Manuel Ascarraga, in "La Libertad del Comercio de Filipinas," says:

"To the 'Real Compañía de Filipinas' was conceded the exclusive privilege of trade between Spain and the archipelago, with the exception of the traffic between Manila and Acapulco. Its ships could fly the Royal Standard, with a signal to distinguish them from war vessels. It was allowed two years, counting from the date of charter, to acquire foreign built vessels and register them under the Spanish flag free of fees. It could import, duty free, any goods for the fitting out of its ships or ships' use. It could take into its service royal naval officers, and while these were so employed their seniority would continue to count, and in all respects they would enjoy the same rights as if they were serving in the navy. It could engage foreign sailors and officers, always provided that the captain and chief officer were Spaniards.

"All existing decrees and royal orders forbidding the importation into the Peninsula of stuffs and manufactured articles from India, China, and Japan were abrogated in favor of this company. Philippine produce, too, shipped to Spain by the company could enter duty free.

"The prohibition on direct traffic with China and India was henceforth abolished in favor of all Manila merchandise, and the company's ships in particular could call at Chinese ports.

"The company undertook to support Philippine agriculture, and to spend with this object 4 per cent of its net profits."

The company was permitted to sail its ships to and from Europe via Cape Horn in contravention of existing treaties, but no serious objection was made to this arrangement, for Spanish commerce had become so reduced that its power as a competitor was not feared by other nations. In the interests of this company foreign ships were prohibited from bringing European merchandise to the Philippines, although they were allowed to bring in oriental goods.—*Director.*

jealousies between the rival lines, the old dispute was revived regarding the right of the nao to carry Chinese, Indian, and Japanese merchandise, and articles of Philippine production to Acapulco. The Real Compañía de Filipinas, with the object of building up a local market, distributed round sums among the agriculturists for the purpose of encouraging the cultivation of indigo, cotton, silk, sugar, and spices; but the people of Manila were better satisfied with the commerce that was carried on with Acapulco, which had now become an established line of traffic. The Real Compañía received little encouragement in its efforts to develop the islands, as it was generally believed that the benefits derived would be enjoyed by the company and not by the people.

In order to advance the interests of the Real Compañía the King, in 1789, issued a decree making Manila a free port for the importation of all kinds of Asiatic products, and allowing the foreign ships to enter freely. This was done to furnish the company with cargoes as freight to Spain, but notwithstanding these measures the financial condition of the new navigation company became worse from year to year. The management of the company was bad; some of the contracts entered into were absurd in their nature and impracticable. Its business remained undeveloped because of the amount of red tape attending the administration in every branch. In the year 1830 the company went into bankruptcy and ceased all operations. The privileges and concessions which had been granted to it were then repealed and the port of Manila was officially opened to foreign ships and foreign trade.[1]

Besides the encouragement given by the company to the development of agriculture in the Philippine Islands, it attempted to foster other enterprises, such as the manufacture of domestic fabrics, cotton cloths, *guinaras*, and other cloths and fabrics.

In 1790 the company had invested in ships the sum of 591,900 pesos, and in buildings and lands the sum of 422,000 pesos; in the space of five years its gross receipts reached the sum of 9,599,000 pesos, and the total value of funds handled for all purposes in conducting its enterprises was 23,488,400 pesos. The total profits during the first five years in which it did business were estimated at 802,050 pesos.

The encouragement which the company had given to industrial enterprises, principally agricultural undertakings, and the opening of the port of Manila to the commerce of the world, in a short time produced most satisfactory results. While it is true that trade with Acapulco had ended, another commerce had been built up on a more solid basis. Under the changed conditions the colony was exporting

[1] The privileges of the company were decreed to have expired by royal order of May 28, 1830.—*Director.*

products of its own raising and manufacture, and the markets of Europe were now open to its export trade.

In the year 1814 the English Government obliged Spain to open to foreign trade certain ports in its colonies and to allow foreigners to establish themselves and become residents in such ports. The results of this action by the English were quickly felt. English, American, German, and French merchants were soon established in Manila, agriculture was encouraged, and the amount of exported goods increased rapidly; the importance of this export trade constantly increased and was in a flourishing condition at the date of the loss of these islands to Spain.

For a short period there was a suspension of the import and export trade, due to a suspicion on the part of foreigners and the ill feeling produced by the assassination of the foreign residents in Manila by the populace in 1820, who were excited thereto by certain of the friars; but within a short time foreigners had again taken up their residence in Manila, and from that time on their work for the civilization of these islands was uninterrupted.[1]

In the year 1826 there was created a *junta de aranceles* (a committee on customs duties) which prepared and published a tariff of rates and fixed the duties on the different kinds of goods. A distinction was made in the tariff between goods imported in ships carrying the Spanish flag and those imported in foreign ships. In 1855 the tariff rates were modified, but the principle of protecting the Spanish ships was preserved. After this the tariff rates were changed several times, and these changes were not always for the best. Opportunities for the commission of frauds were made, inasmuch as the tariff rates were fixed on an ad valorem basis until in 1891, when new schedules were provided in which the ad valorem basis was abolished.

About the middle of the nineteenth century Messrs. Russell, Sturgis & Co. and Messrs. Peet, Hubell & Co., of the United States, established themselves in business in Manila. In order to encourage the production of hemp and sugar the representatives of these two houses distributed large sums of money in the provinces to the agriculturists; and owing to this cooperation and to work of a similar nature which Mr. Loney, an English subject, did in Iloílo and other provinces of the

[1] From the time of the establishment of Spanish sovereignty in the islands until 1815, when the last state galleon left Acapulco, Mexico, for Manila (the last one for Mexico having left Manila in 1811), there was no direct trade with Spain, and for more than two centuries the commerce was confined to Mexico, during nearly the whole of which period Acapulco was the port of destination. A few shipments were at first made to Navidad. The galleons not only conveyed merchandise, both going and returning, but also civil and religious functionaries, occasional private passengers, military officers and troops, prisoners, and mails. They constituted the only means of communication and transportation. The passenger fare at the end of the eighteenth century for a round trip was $1,500, and the voyage lasted from two to six months.—*Director.*

Visayan Islands, the exportations of hemp and sugar increased from year to year, and the export trade of the Philippine Islands was greatly augmented. In the year 1852 the Spanish Bank of the Philippine Islands was established in Manila, with a capital stock of 400,000 pesos, which was subsequently increased to 1,500,000 pesos. This bank was the only one authorized to issue notes, and it still claims but does not enjoy that privilege.

At the present moment the agricultural interests, which are the basis of the export trade, are passing through a period of prostration more serious than any heretofore known in the history of these islands, due to the almost complete loss of the carabaos, which are the work stock of the country; to the locust pest, which has afflicted many sections during the last few years; and to the upheaval caused by the war, which has not yet subsided. Owing to the production of hemp, copra, and tobacco, the balance of trade in 1902 was in favor of the Philippines, and in all probability the value of the exports will continue to exceed the value of the imports for the year 1903. The monetary standard for the Philippine Islands was at one time gold, which was coined in Manila in a mint established in 1857. The denominative values of the coins issued were 1, 2, and 4 peso pieces; but the Spanish Government having allowed Mexican silver pesos to circulate in these islands at par with the local coins at a time when the price of silver was going down all over the world, the stock of Philippine gold coins soon left the archipelago. The insular treasurer has lately put in circulation a new coin of a denominative value of 1 peso, and of an intrinsic value of 50 cents in money of the United States, and since January 1, 1904, Mexican money has not been accepted as legal tender in these islands.

REVENUES.

At the start the Spanish colonists could depend on scant revenues for the expenses of the Government in the new colony; the small amount of taxes collected consisted principally of tributes paid by the Filipino tribes. A percentage tax was collected on all gold coined into money, and the stamped paper and other taxes collected in insignificant sums as fees on certain official documents constituted, with the tribute paid by the Chinese residents, the total revenues on which the government could rely. It became necessary that the viceroy of Mexico should draw on his cash box to help the Philippine Islands meet their budget of expenses; a certain sum, called el situado, was sent annually from Mexico to Manila for this purpose.

The situado at the start was in the nature of a loan made by Mexico, but by the provisions of a royal cédula dated February 19, 1606, it was provided that the total of the custom-house collections in Acapulco on the Chinese and Philippine products imported from Manila should annually be sent to these islands, and that any additional sum

required for the expenses of these islands should be made up from the Mexican treasury.

In the year 1620 the total revenues collected in the Philippine Islands were 593,922 pesos, and as the expenses of the government were 850,734 pesos, the Mexican treasury had to send the 256,812 pesos necessary to balance the budget. As a matter of fact this great difference between the receipts and disbursements would not have existed had it not been that the Philippine Islands were made to pay the expenses of the government of the Molucca Islands, which at that time were in round numbers approximately 230,000 pesos a year.

In 1620 the tributes paid by the Indians who lived on the Crown lands were 53,715 pesos; the tributes paid by the Indians who were encomiendas of private individuals, i. e., who lived on lands belonging to concessionaries of the Spanish Government, reached a total of 21,107 pesos; the permits and occupation taxes collected from the Chinese subjects yielded 112,000 pesos; the tribute paid by the Chinese residents was 8,250 pesos; the *quinto y diezmo* (fifth and tenth) royalty tax on gold mined in the islands was 750 pesos; the tax called *diezmos eclesiasticos* (church tithes) yielded 2,750 pesos; the customs duties collected on goods imported into Manila and into Acapulco, Mexico, amounted to 300,000 pesos; there were also collected as fines and other minor taxes about 8,000 pesos.

The tribute paid by the Indians for both the husband and the wife was at the beginning 1 peso per annum; afterwards this was increased to 1.25 pesos, and was payable either in coin or in products of the soil, or in goods in which the taxpayer dealt; but by the Laws of the Indies, it was provided that this tribute should be paid by the delivery of 50 *gantas de palay* (158.5 quarts of rice in the husk) or 22 gantas of rice (69.7 quarts of cleaned rice), which were valued at 3 reals (37 cents), and of 1 hen, which was valued at 1 real, leaving 6 reals which were to be paid in coin. The Chinamen, both pure and mixed blood, paid tribute in higher sums.

In the year 1782 the Government took over the monopoly of the tobacco produced in the islands, with the expectation of collecting handsome revenues from that source. The cultivation of the tobacco plant was quickly extended to certain sections believed to be adapted to its production. In the year 1783 tobacco was being grown in the Visayan Islands, in 1784 in Pangasinán, in 1785 in Nueva Écija (Gapán), in 1794 in Bulacán, in 1798 in Cagayán, in 1799 in Mindoro and Marinduque, and by the year 1833 the cultivation of tobacco had been extended to the section of country occupied by the Igorot, in the provinces of La Unión and Abra.

In the year 1638 stamped paper was first used as an income producing medium, and in the middle of the eighteenth century the sale of

papal bulls was also taken up by the treasurer to His Majesty the King of Spain; another source of revenue for the exchequer were cock fights, which were licensed, and which had become fashionable throughout the archipelago. Later still, in 1834, the insular revenues were increased by the Government taking over the monopoly for the sale of opium, and again in 1850 by the establishment of an official lottery and the profits derived therefrom.

From custom-house duties were derived revenues which were devoted to government expenses from the first days of the establishment of the colony. The duties on imported goods were estimated ad valorem; the assessable value was arrived at by increasing the prices given on Indian goods 50 per cent and on Chinese goods 33⅓ per cent.

The Indians were obliged to give forty days' labor in each year to the public service, or in default thereof to pay a fine to the public treasury. In the year 1884 this tax was abolished and was substituted by a species of poll tax called *cédulas personales*; this tax ranged from 1.50 pesos to 37.50 pesos per annum. By the royal decree of 1883 all males, regardless of nationality, were obliged to present themselves to the authorities for a term of fifteen days each year, or in lieu thereof to pay the amount of 3 pesos. There is nothing contained in this royal decree regarding the date when the Indians were first obliged to comply with its provisions, but it is safe to assume that all the natives were obliged to present themselves to the authorities annually at certain times since the first days of the Spanish sovereignty. Nevertheless, in the Laws of the Indies is contained a provision prohibiting anyone from accepting or enforcing unpaid labor; in Volume VI, Chapter XII, 1609, is contained Law No. 40, which specifically provides that under no pretext whatever shall the Indians be obliged to work without remuneration.

Under another law (*Leyes de Indias*, Vol. VI, Title 18) each Chinaman was made to pay the sum of 8 pesos as a residence tax and a surtax on this amount of 1.50 pesos to the public treasury, with the proviso that if, after the expenses for which this tax was collected had been paid, there was any balance left in the treasury, the taxpayers should be credited in the next succeeding year with the proportion overpaid by them. In 1799 the residence tax was reduced to 6 pesos, but the aliens were made to pay an additional tax to cover the expenses of maintaining the hospital, the church, the police, and other administrative expenses connected with the Parian, a building which had been built exclusively for Chinese residents and in which they were obliged to live.

In the year 1828 the Chinese subjects resident in the Philippine Islands were divided into three classes according to their business operations or trades: First, merchants of the first class, who paid an annual tax of 120 pesos; second, those who paid an annual tax of 48

pesos; and third, the smaller merchants, who paid an annual tax of 24 pesos. The Chinese merchants who came within the first and second classes were allowed to pay their tax for seventeen years in advance, and were thereafter exempt from all taxation. In 1830 a fourth class of Chinese merchants was provided for, which was allowed to do business on payment of an annual tax of 12 pesos.

In 1850 the rate of taxation for the first-class merchants was slightly reduced, and in that year the total sum collected from the 7,422 Chinese subjects resident in the Philippine Islands was 94,817 pesos; the number of Chinamen resident in the islands was ascertained by official reports made at the time of their immigration. In the year 1884 the Chinamen paid taxes to the amount of 227,751.15 pesos, and in 1893 the taxes paid by them had reached the sum of 490,755.19 pesos.

In 1878 was established the system of taxation called *industrial*, and also a tax on the rent value of buildings, which was called *urbana*. This new system of taxation was inaugurated when the Government gave over the tobacco monopoly, and the collections from the industrial and urbana taxes were intended to take the place of the amounts theretofore collected on tobacco. The industrial tax was paid by all persons engaged in any industry, business, profession, art, or trade; the urbana tax rate was 5 per cent on the net rentals obtained from city property.

Under the law of 1883 all males between the ages of 18 and 60 years were obliged to furnish the number of days' labor required by law, to the Government; the only exceptions made were in favor of persons belonging to religious orders, officers and enlisted men, sacristans and other attachés of the churches, and municipal and insular employees.

The budgets of receipts and disbursements for the colony were approved by the *ministro de ultramar* (colonial minister), and these budgets were not submitted to the Spanish Cortes for the consideration or approval of that body. In the fiscal year 1896–97 the expenditures of the colony were estimated at 17,293,882.65 pesos and the receipts at 17,474,020 pesos. The appropriations for the navy in that year were 3,566,528.58 pesos; the army, 6,042,442.43 pesos; the church—that is to say, the maintenance of the official religion—1,385,038 pesos; the judiciary, 414,406 pesos; public works, 142,575 pesos; public instruction, 141,900.50 pesos. Of the total expenditures, the sum of 9,824,247.66 pesos was paid out in salaries.

In the year 1817 the total treasury receipts were 1,499,760 pesos, of which amount 153,288 pesos were collected as customs duties, 400,870 pesos were collected from the monopoly on tobacco, 153,641 pesos were collected on alcoholics, and 25,169 pesos were collected from cockpits.

The customs duties now being collected are greater than those paid under the Spanish régime. In the fiscal year 1901–2 the customs

collections were $9,129,687.73; in the fiscal year 1896–97 the customs collections were only 6,200,000 pesos.

In addition to the industrial tax still being collected there has now been imposed a land tax. In the city of Manila the maximum rate for the land tax has been fixed at 2 per cent of the assessed value of the lands and improvements, but up to 1903 it has not been necessary to collect more than 1½ per cent on the assessed values. Outside of Manila the law authorizes the municipal governments to collect a land tax at any rate not in excess of one-half of 1 per cent, and the provincial governments at any rate not in excess of three-eighths of 1 per cent, which means that the tax on real property outside of the city of Manila, for both municipal and provincial purposes, can in no case exceed a maximum rate of seven-eighths of 1 per cent of the assessed value of the property.

The old poll tax, known as cédulas personales, which was divided into various classes ranging from 1.50 to 37.50 pesos, has been abolished. All males between 18 and 55 years are now obliged to pay a poll or registration tax of 1 peso local currency. The use of stamped paper has also been abolished, and lotteries are no longer used as income producers.

GOVERNMENT.

The basic principle of Spanish politics and legislation in their colonies beyond the seas is contained in the instructions which their Catholic Majesties delivered to Columbus when he started on his second trip to the West Indies. About a century before the Philippine Islands came under the Spanish dominion the mother country inaugurated this system of colonial government, and there already existed a body of laws applicable to its new dominions. The spirit which prevailed at that time in Spanish legislation and jurisprudence pervades these laws.

In Spain it was impossible to find the slightest indication of any separation between church and state; in the Philippine Islands this union was apparently even more intimate. The kings of Spain, when new lands were discovered by their subjects, recognized the right of the Pope above that of any other power on earth to dispose of the territory not already settled by Christian people, and this right was afterwards confirmed in the concessions made to the clergy.

The Spanish kings openly claimed that the primary object of the discovery of new lands was for the purpose of converting the natives to the Catholic faith; and the Pope, as a compensation for the expense incurred by the Spanish Government in making the conquest and in extending the faith, issued a bull on September 3, 1501, giving the insular government the right to collect the church tithes in the Indies. Spain, however, was to endow and maintain the churches established

in her colonies. The establishment of the *Regio Patronato Indias* (Royal Patronate of the Indies) was therefore different from the *Patronato Español* (Spanish Patronate), inasmuch as the colonial church establishments and clergy were not supported by church funds, but instead by appropriations made for that purpose by the Spanish kings. To the temporal power which the Spanish monarch exercised in his new possessions the Pope added certain ecclesiastical power or rights, as provided in the royal patronato; the Spanish sovereign therefore enjoyed a greater scope of power in the Indian possessions than was exercised by any of his royal contemporaries.

To these facts may be attributed the religious nature of the laws which were enacted in Spain for the government of their possessions beyond the seas in general and of the Philippine Islands in particular; some of these laws were of a political or civil nature, but all were impregnated with the religious spirit so characteristic of that epoch. All of the provisions of the laws issued by the Spanish sovereigns regarding the government of Spanish colonial possessions were codified and published for the first time in Spain in 1628 by Aguiar. The title given to this code was "*Sumario de la Recopilación General de las Leyes de Indias.*" This work was followed in 1680 by another official code, entitled "*Recopilación de las Leyes de Indias.*" The first law which appears in this code is entitled "An Exhortation to the Holy Catholic Faith and How All True Christians Should Practice It." The final sentence of this law is as follows: "If the inhabitants of the Indies should obstinately and persistently err and become hardened against the teachings of the Holy Mother Church, they shall be punished in the manner prescribed by law."

At the beginning, the legislative power regarding affairs in the Philippine Islands and in the other colonial possessions of Spain in America was vested in the King, assisted by his council of the Indies. Later, after the vicissitudes which the Spanish monarchy underwent in 1837 and after the council of the Indies had been suppressed, the legislation to be enacted for the Philippine Islands was prepared by the council of ministers, at first under the charge of the secretary of government; eventually, after various other systems had been tried and rejected, these islands were put under the charge of the colonial minister, in 1863. In article 2 of the Spanish constitution of 1837 it was provided "That the colonial provinces shall be governed by special laws." This provision of law was subsequently reenacted in the constitutions of 1845, 1869, and 1876. The council of the Indies was also the court of final resort to which were appealed all matters coming up in the colony, and to which were appealed certain cases, either from lack of jurisdiction on the part of the authorities or because of the elevated position or great influence of the contesting parties. This

council was first organized in 1542 and was located at the Spanish court. For the purpose of conducting war a special department was created within the council of the Indies, composed of four of its members and four members taken from the War Department.

There was also established in Madrid a council of state, which acted as an advisory or consulting body for the colonial minister, one of the bureaus of which was charged entirely with colonial affairs. There was also another bureau, called the "Council of the Philippines," but this bureau was of little utility and the work it accomplished was practically nil.

Legaspi, the first governor and captain-general of the Philippine Islands, was given the title of adelantado. This title was conferred on discoverers who brought with them sufficient people to occupy and populate regions when they were first discovered or which had up to that time been little known and had remained unoccupied. Legaspi, following the usual custom, undertook this expedition of discovery at his own expense. The return he expected for his work was to provide official posts in the Philippine Islands in which to place his followers. The King had conferred on Legaspi the right to govern in his name; indeed, he was qualified to assume all the powers of a governor or viceroy over the Philippine Islands, which powers he was to exercise in accordance with the Laws of the Indies.

Legaspi's successors until the year 1584 were also given the title of adelantado, and governed the islands under the same powers as were given to him. In the year mentioned Don Santiago de Vera arrived in Manila as governor and captain-general of the Philippine Islands, and also ex officio president of the new audiencia which had been established. This tribunal was not only a court of justice with appellate jurisdiction, but was also a superior council to which were referred political and governmental matters of general interest to the colony.

The president of the audiencia, however, was not bound by the advice or vote of that body, and was given full discretion to take such final action as he should deem expedient for the interests of the government. The other members of the audiencia consisted of four *alcaldes delcrimen* (oidores); a *fiscal* (attorney); an alguacil mayor; a *teniente de gran canciller* (assistant to the grand chancellor); and the necessary subordinate officials.

In the absence of the governor the islands were governed by the audiencia, and all matters civil and political were decided by the members of that body; the dean of the tribunal was the presiding officer during the absence of the governor, and was given the title of captain-general.[1] After the assassination of Bustamante the proceeding for

[1] Under this authorization the audiencia of Manila assumed the government of the islands pro tem seven times. The senior auditor then assumed the duties of president and captain-general.—*Director.*

the succession was changed, and during the governor's absence or any vacancy in the office of the chief executive the Archbishop of Manila assumed the duties of governor and captain-general. After the taking of Manila by the English in 1762, during the regency of the archbishop, the order of succession was again changed, and the office of lieutenant-governor was created. A subsequent change was made in the order of succession by which, during the absence of the governor, the general of the army, or in his absence the admiral of the navy, assumed the duties of chief executive of the islands.

The powers given to a governor of the Philippine Islands were practically unlimited, and no law could be enforced or remain in force if it was not in accordance with his views. The ancient powers which had been conferred on the royal audiencia to govern, and to constitute a council to assist the governor in his administration of affairs, were transferred about the middle of the nineteenth century to the board of authorities and to the *consejo de administración* (council of administration).

The board of authorities was created by royal decree of April 16, 1850, and acted as an advisory board to the governor, and to this board matters of unusual importance were referred. This board was composed of the archbishop, the general second in command, the admiral, the *intendente* (treasurer), the director-general of the civil administration, the president of the audiencia, the fiscal representing His Majesty, and later were included as members of this board the civil governor of the province of Manila, the bishops of the islands, and the provincial heads of the religious orders. The council of administration was established in January, 1863.[1] This board was used by the governor for purposes of consultation regarding the ordinary matters of administration, but the governor was not necessarily guided by the opinion of the council of administration and was given ample power to take such final action as he saw fit.

One of the governor-general's secretaries was charged with matters relating to the royal patronage, political and executive matters, public order, and international affairs; to this secretary were also referred such matters relating to the administration of justice as were not referred to the audiencia and the other courts of the islands.

The general second in command was at the head of the entire military force of the colony; the admiral had command of the navy. The office of director-general of the civil administration was created in 1874, and was charged with the management of municipal and provincial governments, public education, public works, the inspection of mines and forests, public health and charity, agriculture, and the management of posts and telegraphs.

[1] Pursuant to the royal decree of June 4, 1861.—*Director.*

The *intendente de hacienda* (superintendent of the treasury) was the head of the treasury department, and was also charged with supervising the duties of the auditor and the administration of the custom-house and lotteries.

Since the end of the seventeenth century the governor of the Philippine Islands has always been an officer holding a commission in the army. At the beginning the islands were divided into three or four provinces, and an alcalde mayor was named as the chief functionary in each province. At times magistrates (corregidores) were put in charge of provinces. The subdivision of these large provinces kept pace with the progress made in the colonization of the islands. New provinces were created, and an attempt appears to have been made to form them according to the dialects of the native tribes, so that the language spoken in each province should be the same. There were thus formed the provinces of Pangasinán, Pampanga, Ilocos, and Cagayán, each composed of several municipalities, and in each one the native population spoke the same dialect.

During the first days of the colony the Indians were governed under a system very similar to that which they had before the arrival of the Spaniards. The chiefs of the various tribal groups were continued under the title of cabeza de barangay, and they were confirmed in authority in the name of the King of Spain. This native title was hereditary, and when there were no male descendants to represent any particular cabeza the succession was filled by appointment made by the Spanish Government. Although the orders of the King strictly prohibited the Spanish colonists from obliging the chiefs of the tribes to collect the tribute from the natives, the custom nevertheless obtained, and many cabezas de barangay were arrested and punished by fines and otherwise for failing to properly collect and account for the tribute from the members of their tribes. These chiefs paid no tribute on their own account, and at the end of three years' satisfactory service they were allowed to resign as cabezas and were thereafter also exempt from the payment of the tribute. The retired chiefs thereupon became members of a local municipal body called *la principalia*,[1] the other members of the body consisting of the other privileged classes in the town.

Each town had an additional chief called a *gobernadorcillo* (petty governor), which title was given him at the time of the Spanish occupation and was continued in use until the end of the Spanish sovereignty. The gobernadorcillo was elected by the cabezas de barangay in each municipality. The names of three candidates were sent at the

[1] Under the Spaniards the *principalia* (principal persons) were understood to be the aggregate in each pueblo of all those individuals who had held office or were holding office or who paid a land tax of $50. The principalia constituted the voting class—no one could vote who was not a member of the principalia.—*Director.*

beginning of each year to the governor-general, or, in certain distant provinces, to the local representative of the central government, and one of the three candidates was selected and appointed by the governor as gobernadorcillo.

In the year 1782 the governor changed the name of gobernadorcillo to alcalde, which was the official title given to these officers in the law; but the King in a royal cédula of July 18, 1784, directed that the title of gobernadorcillo should be respected, stating, however, that it was a diminutive form of title not suited to describe an official charged with the administration of law. In the Laws of the Indies, Vol. VI, Title II, Law 16, is prescribed the power of the Indian alcaldes; their jurisdiction was limited to the examination, arrest, and imprisonment of Spanish residents, but they had power to imprison an Indian for a term of one day and to give him from six to eight lashes for failing to attend mass on feast days or for getting drunk; the alcaldes under the provisions of the law referred to were charged with the administration of municipal affairs. Inasmuch as Spaniards were prohibited from taking up their residence in towns occupied by Indians the law referred to was limited in its application to the Indian towns. The other towns, wherein Spaniards resided, organized their municipal councils in the same manner as was done in Manila.

As has been stated already the provincial governments were in charge of the corregidores and in some cases of the alcaldes mayores; the latter were sometimes lawyers, but as a rule the alcaldes mayores were political favorites and selected without regard to the incumbent's knowledge of law or of the affairs which he was to administer. The offices of *gobernadores* were filled by judges of the first instance, by army captains, and by protectors of the Indians, and, as a general rule, the incumbent was not fit for the office. The King, on many occasions, ordered that the alcaldes should not engage in business, as it was feared that they would monopolize certain branches of trade and exploit the natives; but on June 17, 1754, a royal cédula was issued by which they were allowed to engage in commercial undertakings upon payment of a "fine for indulging in commerce." This fine ranged from 40 pesos per annum, which was the amount paid by the alcalde of Zambales, to 300 pesos, which the alcaldes of Calamianes and Caraga each paid annually. In 1840 some of the offices of alcalde were worth 50,000 pesos per year.

In the year 1886 the office of alcalde mayor was abolished, and the office of *gobernador civil* (civil governor) was established. The civil governors were under the immediate direction of the governor-general, and were charged with the administration of the laws and with the management of the financial matters of the various provinces; among other duties they were charged with the punishment of offenses

against the *religious* of the state. They were empowered to impose fines to an amount of $50 and to punish by imprisonment for a term not exceeding thirty days; appeal from the sentences of the civil governor to the governor-general was allowed. The judicial power, which had been vested in the alcaldes mayores, was given to the judges of the courts of first instance which were created at the same time as were the offices of civil governors. The conflicts of authority which arose between the civil governors and the judges of first instance were decided on appeal by the governor-general after he had consulted with the advisory board.

Inasmuch as a special account is given herein of the judiciary of the Philippine Islands, no statement is given regarding the changes which were made necessary in the royal audiencia by the reorganization of the lower courts during the last few years of the Spanish sovereignty. In 1893 a law was promulgated reorganizing the municipal governments in towns in which more than 1,000 cédulas personales were paid. The new law did not change in any manner the municipal law of Manila. At the beginning no municipality could be organized unless there were 500 residents who paid tribute taxes, which would mean at least 1,000 residents in the township. The municipal *tribunal*[1] was composed of five officers—the captain and four lieutenants. The head lieutenant was called *mayor;* the other three were in charge respectively of the police, the cemeteries, and all live stock in the municipality. The municipal offices were elective, and were filled as follows: The provincial governor fixed a day on which the principalia held a town meeting presided over by the civil governor, the parish priest, and the municipal captain. At this meeting twelve electors were selected from among the residents of the town. Six of the twelve electors had to be ex-captains of the municipality, and the remaining six were selected from among the larger taxpayers in the town. This committee was composed therefore entirely of persons belonging to the privileged classes. The twelve electors at once proceeded to hold an election behind closed doors, and those receiving a majority vote were the successful candidates. In addition to the municipal officers elected there were also elected two *suplientes* (substitutes), who had no duties to perform except in case of the death, resignation, or absence of the principal. The twelve electors, as representatives of the principalia, attended the sessions and joined in the discussion of measures coming before the municipal council, the meetings of which were called by the captain.

The municipal offices were held for four years; they were purely

[1] The municipal *tribunal* consisted of a captain and four lieutenants, and formed the active government of the pueblo. They were elected by twelve delegates chosen by the principalia and were required to serve four years.—*Director.*

honorary positions and no salary or other emoluments attached to them. The qualifications for captain were citizenship; that is, he should be either a native or a half-breed Chinaman, 25 years of age; be able to speak and write the Spanish language; be a cabeza de barangay with four years' service at the time of election or have seen six years' service at some previous time; or have been a captain or lieutenant during the term of two years.

The captain had the municipal ordinances published and it was also his duty to enforce the municipal laws; but he was also given the power to suspend the laws whenever he considered them contrary to the public good or to the preservation of public peace and order.

The division of the natives into barangayes was continued as in the olden times; each barangay was supposed to have at least 100 and not over 150 families. The barangayes who lived within the city limits were supposed to contain from 50 to 99 families each. The cabeza de barangay was ex officio *teniente de barrio* (lieutenant or head of the barrio) or municipality, ward, or precinct.

Taxes, constituting municipal funds, were collected as follows: On fisheries, on bills of sale of live stock, on rentals from town properties, licenses on billiard saloons, theaters, markets, slaughterhouses, tolls on bridges and ferries, pounds for stray animals, street lighting and cleaning; a 10 per cent surtax was also charged on the city property tax. There were also taxes collected on agricultural lands and certain fines, which were local in their nature and created according to the necessities of the budget in each town. For the purpose of imposing taxes, holding elections, school inspection, and the preparation of the budgets, the presence of the parish priest was necessary at the sitting of the board. The taxes collected on property belonging to the province were kept distinct from the other taxes collected for municipal purposes, and were used exclusively to pay the expenses incurred in making public improvements. All of the taxes were collected by the cabezas, who were made personally responsible for the amounts collected. The municipal funds were kept in the safe of the provincial government at the capital of the province, and a captain of the municipality was allowed to keep on hand only such amounts as were necessary to pay the running expenses of the municipal administration.

The tax on rural property was imposed at a certain percentage on the assessed value of the plantation or other holding, whether cultivated or not. The rate of taxation was fixed at a meeting of the municipal council attended by the parish priest.

The governor-general, and as his representative the governor of the province, was honorary or ex officio president of each and every municipal council. This new system of municipal organization was established on January 1, 1894.

For the purpose of auditing the collection and expenditure of municipal funds, and reporting to the governor of the province certain other municipal affairs, there was established in each locality a *junta provincial* (provincial board), composed of the *promotor fiscal* (a deputy assistant prosecuting attorney), the provincial treasurer, all the vicars who lived in the province, and the parish priest of the locality. The civil governor presided over the meetings of this board, to which was delegated all power over the disbursement of the municipal funds.

In each town there was a corps of municipal police, called *cuadrilleros*. A rural police force was also provided, whose duties were to run down evil doers and cooperate with other peace officers in the province. This body was called the *guardia civil* (civil guard), and the soldiers of which it was composed were all natives and the officers all Spaniards. In Manila the police force was organized in a somewhat similar manner to the civil guard, and was called the *guardia veterana* (veteran guard). Both the civil guard and the veteran guard were guilty of many acts of cruelty, and committed such excesses for the purpose of discovering criminals and their accomplices, as well as the insurgents in the last rebellion against the Spanish power, that great odium attached to them, and they were heartily hated by the Filipino people.

A history of the government of the Philippine Islands would be incomplete unless a statement regarding the organization of the Catholic Church were included, inasmuch as the clergy were in reality civil functionaries. The Archbishop of Manila was at the head of affairs and was assisted by the bishops of Jaro, Nueva Cáceres, and Nueva Segovia. Subordinate to them were the curates or parish priests appointed to each town, who, in addition to the duties of their curacies, had ex officio civil functions and powers in the administration of the municipal government in the manner related in the note below.[1]

[1] During the investigation of the religious orders made by the Philippine Commission in 1900, Father Juan Villegas, the provincial or head of the Franciscan friars, testified as follows as to the civil duties and powers exercised by the members of his order in the municipalities:

"The following may be mentioned as among the principal duties or powers exercised by the parish priest: He was inspector of primary schools; president of the health board and board of charities; president of the board of urban taxation (this was established lately); inspector of taxation. Previously he was the actual president, but lately honorary president, of the board of public works. He certified to the correctness of the cédulas—seeing that they conformed to the entries in the parish books. They did not have civil registration here, and so they had to depend upon the books of the parish priest. These books were sent in for the purpose of this cédula taxation, but were not received by the authorities unless viséed by the priest.

"He was president of the board of statistics, because he was the only person who had any education. * * *

"Under the Spanish law every man had to be furnished with a certificate of character. If a man was imprisoned and he was from another town, they would send to that town for his antecedents, and the court would examine whether they were good or bad. They would not be received, however, unless the parish priest had

The governor-general of the Philippine Islands, in his character of vice royal patron, was charged with settling all matters connected with the patronage. He was kept informed of all resignations and vacancies arising in the curacies and other ecclesiastical holdings. He was supposed to name candidates for appointment to the vacant curacies, to certify the oaths of office taken by the bishops, and to intervene in all religious disputes. He was supposed to at first advise and warn the disputants, but he was also authorized, if necessary, to establish peace and order by force of law.

All the high functionaries of the government were appointed in Madrid, and only the subordinate employees in the public offices were selected in Manila. Every item of expenditure in the colony was incurred subject to the approval of the colonial minister.

Under the sovereignty of the United States the form of the Philippine government has been completely changed. Instead of the centralized form of government, by which everything was referred to Madrid, under the new régime the largest measure of autonomy has been conceded, and Manila is now the seat of the executive, legislative, and judicial branches, with certain limitations which are fixed in the organic law of the Philippine Islands enacted by the United States Congress and approved by the President on July 1, 1902. The legislative functions are exercised by a body known as the Philippine Commission, composed of five American and three Filipino members. This body has also the power of general supervision over the govern-

his visé on them. The priests also certified as to the civil status of persons. Every year they drew lots for those who were to serve in the army, every fifth man drawn being taken. The parish priest would certify as to that man's condition. * * *

"By law he had to be present when there were elections for municipal offices. * * * He was censor of the municipal budgets before they were sent to the provincial governor. * * * He was also counselor for the municipal council when that body met. * * * The priests were supervisors of the election of the police force. * * * He was examiner of the scholars attending the first and second grades in the public schools. He was censor of the plays, comedies, and dramas in the language of the country, deciding whether they were against the public peace or the public morals. These plays were presented at the various *fiestas* of the people. He was president of the prison board and inspector (in turn) of the food provided for the prisoners. He was a member of the provincial board. Besides the parish priest there were two curates who served on this board. Before the provincial board came all matters relating to public works and other cognate matters. All estimates for public buildings in the municipalities were submitted to this board. He was also a member of the board for partitioning Crown lands. After the land was surveyed and divided, and a person wanted to sell his land, he would present his certificate, and the board would pass upon the question whether or not he was the owner. This would be visèed by the board for the purposes of taxation. When a private individual wanted to buy Government land he would apply to the proper officer, pay his money, and the board would determine whether the transfer was according to law.

"In some cases the parish priests in the capitals of the provinces would act as auditors. In others, where there was an administrator only, the curate would act as auditor.

"Besides the above there were other details which devolved upon the priest. It might be said that there were times, however, when nothing of moment was done in the towns."—*Director.*

ment of the islands. The civil governor is the chief executive of the islands and ex officio president of the Commission. The vice-governor acts as chief executive during the absence of the civil governor or during a vacancy caused by any reason. The four executive departments of government—interior, commerce and police, finance and justice, and public instruction—have each at the head a secretary, who is also an ex officio member of the Philippine Commission.[1] The laws enacted by the Commission take effect and are enforced as specifically provided in each law.

The citizens of the Philippine Islands are secured in all of the individual rights which are enjoyed by the citizens of the United States, except in the right to carry arms and to trial by jury.[2] The supreme court of the islands has final jurisdiction in all criminal cases and in all civil suits in which the amount in dispute does not exceed $25,000.

Two years after the publication of the census of the Philippine Islands, of which this historical review forms a part, the President of the United States is to call an election to select delegates who will constitute the Lower House, which together with the Philippine Commission will constitute the Legislative Assembly of the Philippine Islands. The number of delegates is to be not less than 50 nor more than 100, and their term of office is for two years. The elective franchise, for the selection of delegates to the Assembly, will be exercised by all who are now qualified to vote in municipal elections.

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[1] Each department is composed of bureaus as follows:

Department of the Interior.—Bureau of public health, bureau of forestry, mining bureau, Philippine weather bureau, bureau of public lands, bureau of agriculture, the ethnological survey for the Philippine Islands, bureau of government laboratories, bureau of patents, copyrights and trade-marks, Philippine civil hospital, civil sanitarium, Benguet.

Department of Finance and Justice.—Bureau of the insular treasury, bureau of the insular auditor, bureau of customs and immigration, bureau of internal revenue, bureau of the insular cold storage and ice plant, the supreme court of the Philippine Islands, courts of first instance, court of land registration, court of customs appeals.

Department of Commerce and Police.—Bureau of posts, bureau of Philippine constabulary, Bilibid prison, captain of the port, bureau of coast guard and transportation, light-house service, bureau of coast and geodetic survey, bureau of engineering.

Department of Public Instruction.—Bureau of education, bureau of architecture, bureau of archives, bureau of statistics, bureau of public printing, bureau of the census (temporary).—*Director.*

[2] The right to a trial by jury and the right to bear arms have not as yet been accorded the Filipinos because they have very little, if any, sense of public responsibility in regard to the punishment of crime, and are incapable, therefore, of acting as jurors. Again, the average ignorant Filipino is so easily influenced by those who he believes are his superiors that he would rarely, if ever, vote to convict a person of that class, no matter how guilty he might think him. As a substitute for trial by jury the judges of first instance may summon two assessors from the citizens of the province to act as advisers upon the facts. Again, an appeal on the law and facts may always be made to the supreme court, which consists of three Filipinos and four Americans, so it is felt that the rights of the Filipinos in this respect are sufficiently safeguarded. While the people are not allowed to buy or carry firearms, it can not be said that they do not exercise the right to bear arms, inasmuch as every man and boy of the suburban or rural population carries a bolo and knows how to use it.—*Director.*

The Philippine Commission has divided the archipelago into 39 provinces, not including the southern islands, inhabited by Malay-Mohammedans, which comprise the Moro province; for this province a special constitution and form of government has been provided under which a certain degree of autonomy, under the control of the Philippine Commission, has been conferred.[1]

Provincial governors are in charge of the various provinces, but are given no judicial or legislative functions whatever such as were conferred on the civil governors under the Spanish régime. A provincial board consisting of the governor, the treasurer, and the supervisor constitutes the legislative body in each province. This board exercises its legislative functions within the limits prescribed by certain acts of the Commission, and a degree of autonomy in the administration of local affairs heretofore unknown has thus been secured. A secretary and a district attorney are the other members constituting the personnel of the provincial board.

The government of each municipality is vested, by act 82 of the Philippine Commission, of January 31, 1901, and the amendments made thereto, in a president, vice-president, and municipal council. The municipalities are divided into four classes, according to population, and the municipal council is composed of from eight to eighteen aldermen (fourth class), according to the class of the town. All the municipal officials are elected at large for two years by the qualified voters, who must possess the following qualifications: Male citizens 23 years of age, six months' residence in the municipality, who are comprised in one of the following classes, viz, those who during the Spanish régime occupied the position of a municipal capitán, gobernadorcillo, alcalde, teniente, or cabeza de barangay, or municipal councilman; those who own real property worth at least 500 pesos, Philippine currency, or who pay annually any kind of tax to the sum of 30 pesos or over; and, finally, all those able to speak, read, and write the English or Spanish language. The electoral law also makes the necessary provisions for securing perfect freedom in the exercise of the franchise and a secret ballot.[2]

[1] The Moro province was established, after this sketch was written, by act 487 of the Philippine Commission. Its area is given in the chapter on Geography.—*Director.*

[2] As rapidly as the troops of the United States Army could be distributed the islands passed under military control, and the local municipal government established by the Spaniards, where it existed at all, was continued under military supervision. On August 8, 1899, General Otis issued General Orders No. 43, which provided a form of municipal government; and on March 29, 1900, he issued General Orders No. 40 modifying General Orders No. 43, or at least providing a simpler form of municipal government. As the towns became pacified, many of them applied for the establishment of the municipal government prescribed in these orders, and some of them were organized under one order, and some under another, although there were many towns without any established municipal government. This was the condition of municipal government in the Philippine Islands when act No. 82 of the Philippine Commission, January 31, 1901, was passed.—*Director.*

The office of councilman is purely honorary. The president, treasurer, and secretary of the municipalities are paid salaries. The president is the chief executive. No insular or provincial official takes any part or has any control over the municipal council in the passing of ordinances. The municipal or town council is the local legislative body, and it is by law given such ample powers in local matters that the autonomy of the townships is well-nigh complete. The provincial governors intervene only to the extent of securing the faithful discharge by the municipal employees of their duties and the enforcement of the municipal code. Inasmuch as state and church are to-day absolutely divorced, the parish priests no longer have any power or control over municipal matters.

The taxes collected by municipalities are devoted exclusively to the local uses of the municipality, and the insular government is supported by other taxes distinct from those collected by the municipalities. Appropriations are made from insular funds for the payment of the salaries of American school-teachers, men and women, in each municipality, and from municipal funds are appropriated the sums necessary for the salaries of the Filipino teachers, both men and women.

Each municipality has its own body of police, which preserves order within the town proper, and for the maintenance of order in the rural districts throughout the islands the Philippine Constabulary is provided, the chief of constabulary having the provisional rank and title of a brigadier-general of the Army of the United States.

A fleet of coast-guard steamers has been provided for the interisland service of the insular government, such as for the carrying of mails and government employees, for patrolling the coast, and in general for doing duty as a species of revenue cutter or maritime police corps. Under the Spanish régime one of the greatest hardships to which the people were subjected was the obligatory performance of military service. Each province had to furnish yearly a certain number of young men, drawn by lot, for service in the army. He who was drafted could secure a substitute for from 125 to 150 pesos to serve in his place. It was a system under which subterfuges were practiced, and all kinds of abuses arose during the drafting process, and the people were very bitter against the system, as it was openly alleged that many of the officials, both civil and military, were able under the Spanish régime to enrich themselves in this manner. At present obligatory service in the army is unknown, and involuntary servitude has become a thing of the past. The suffering the Filipino people endured under the previous sovereignty was such that they look with horror and suspicion on any attempt to reestablish those customs now happily abolished.

The bill of rights of the Philippine Islands to-day guarantees the liberty of the press, the right to peaceably assemble, and to be heard.

THE EMANCIPATION FROM SPAIN.

The abuses committed by the encomenderos, the high-handed procedure of the alcaldes mayores and treasury officials, as well as the oppression of the natives practiced by the friars, caused incipient rebellions or uprisings among the people from time to time, but these uprisings were promptly quelled by the strong arm of the Government and blotted out in blood and fire. Religious intolerance had also brought about armed conflicts of authority, but, with the exception of the time during which the English occupied Manila, the Filipino people had never risen in a rebellion against the Spanish authority which had for its object secession from the mother country.[1]

The loss by Spain of her American colonies at the beginning of the nineteenth century, and the fact, fully recognized, of the poor system of government which Spain provided for the Philippine Islands caused great dissatisfaction and suspicion on the part of the Spaniards who resided in these islands. The Spanish residents did not conceal their suspicions of the intentions of the Filipinos; the colonial government at the same time committed a great mistake in refusing to allow the natives to participate in the government, in showing its contempt for the people and their aspirations, and in disregarding the complaints of the victims of official oppression.

The uprising, headed by Novales, and other minor disturbances, which occurred in the first half of the nineteenth century, have received only casual mention in this brief review; the real movement for emancipation from Spain was not started until near the end of the reign of Isabella II. This movement was finally crowned with success in 1898.

The effects of the revolution of September, 1868, which cast Queen Isabella II from the throne of Spain, were soon felt in Manila. Since the date of the secession of Spain's American colonies no event in Spanish politics had created such excitement as the fall of the reigning dynasty. After the long period of years during which the Philippine Islands had been governed, without friction, under the then existing political maxims of government, suddenly came the report of the expulsion of the Queen, of the rebellion started by the army and kept going by the people, and of the liberties enjoyed under the provisional government. The reports of these exciting events coming from Spain changed as it were the political atmosphere of the islands. The inhabitants awoke from the state of contemplative quiescence in which up to that time they had accepted the established system, and which had until then appeared to be eternal and immutable.

[1] In the General History of the Philippines, by José Montero y Vidal, published in Madrid, 1887, 1894, 1895, the disturbances, uprisings, and insurrections, and the causes which led to them, are fully described.—*Director.*

The educated Filipinos, filled with hope in the new government which had been established in Spain, believed that an era of true progress had arrived for the Philippine Islands. The new colonial minister, Becerra, directed the governor of the Philippine Islands to report at once on such changes in the colonial administration of affairs as might be necessary to bring his administration into harmony with the principles enunciated by the revolutionists of 1868.

The new Governor-General, La Torre (1869–1871), was received on his arrival with great cordiality, and, for the first time in their history, the most prominent of the Filipino people organized and took part in a manifestation of the satisfaction of the people at large. A civic procession traversed the streets of Manila and went to the palace of the governor to assure him of the loyalty of the people and of the hopes of all that the National Government would now recognize the needs of the colony.

The conservative element in the colony, composed of all those who looked with suspicion on all change and on the Filipinos themselves when they showed any interest in the affairs of their own country, was very apprehensive of the results of the revolution in the Peninsula and of the friendliness which the Filipinos showed to the new government and to the men who were charged with the administration of affairs. The friars especially did not conceal their disgust, and in exaggerated terms began to prophesy the dark days that were coming and the "uncertainty of the Spanish sovereignty." This caused much ill feeling on the part of the Spanish residents toward the Filipinos of prominence and respectability, who no longer concealed their aspirations to cease the inactive mode of life and to cooperate with the Government in the work of the regeneration of their country.

Governor-General La Torre was very unpopular with the resident Spaniards, and especially the friars, who assumed an unfriendly and even hostile attitude toward the chief executive. La Torre, calumniated and treacherously attacked by those of his countrymen who still upheld the traditional political methods of Spain, was finally obliged to leave the islands. His sympathizers among the Filipinos were then made the targets for the attacks of his enemies simply because they had dared to ask that there be extended to the colony a certain measure of the rights and liberties which had been secured to Spain by the revolution of 1868. No one in the islands thought of secession from Spain, nor was any plan considered for the loosening of the bonds which held the archipelago to Spain; on the contrary, the general desire was that the same laws under which the Spaniards in Europe were governed and the same rights that they enjoyed should be extended to the colony in the hope that the colonial possessions might some day

be qualified to become a province of the mother country; but the conservative element in the islands, whether in good faith or whether for political motives, let no opportunity pass for representing to the Spanish authorities that a revolution was being organized, which had for its object the destruction of Spanish sovereignty in the Philippine Islands.

The arrival of General Izquierdo (1871–1873) was the signal for a complete change in the aspect of affairs. The new governor soon made clear that his views were different from those of La Torre—that there would be no change in the established form of government—and he at once announced that he intended to govern the people "with a crucifix in one hand and a sword in the other." His first official act was to prohibit the founding of a school of arts and trades, which was being organized by the efforts and funds raised by natives of standing in the community, but the founding of which did not tally with the views of the religious orders. Governor Izquierdo believed that the establishment of the new school was merely a pretext for the organization of a political club, and he not only did not allow it to be opened but made a public statement accusing the Filipinos who had charge of the movement. All of those who had offered their support to ex-Governor La Torre were classed as *personas sospechosas* (suspects), a term that since that time has been used in the Philippine Islands to designate any person who refused to servilely obey the wishes and whims of the authorities. The conservative element in the islands now directed the governmental policy, and the educated Filipinos fell more and more under the displeasure and suspicion of the governor.

The peace of the colony was broken by a certain incident which, though unimportant in itself, was probably the origin of the political agitation which, constantly growing for thirty years, culminated in the overthrow of the Spanish sovereignty in the Philippine Islands. From time immemorial the workmen in the arsenal at Cavite and in the barracks of the artillery and engineer corps had been exempt from the payment of the tribute tax and from obligation to work certain days each year on public improvements. General Izquierdo believed the time opportune for abolishing these privileges and ordered that in future all such workmen should pay tribute and labor on public improvements. This produced great dissatisfaction among the workmen affected and the men employed in the arsenal at Cavite went on a strike, but, yielding to pressure and threats made by the authorities, they subsequently returned to their labors.

The workmen in the Cavite arsenal were all natives of that town and of the neighboring town of San Roque. In a short while the dissatisfaction and discontent with the government spread all over that sec-

tion and even the native troops became disaffected. On the night of January 20, 1872, there was an uprising among the soldiers in the San Felipe fort, in Cavite, and the commanding officer and other Spanish officers in charge of the fort were assassinated. Forty marines attached to the arsenal and 22 artillerymen under Sergeant La Madrid took part in this uprising, and it was believed that the entire garrison in Cavite was disaffected and probably implicated. But if the few soldiers who precipitated the attack believed they would be supported by the bulk of the army and that a general rebellion against Spain would be declared in the islands they were deceived. When the news of the uprising was received in Manila, General Izquierdo sent the commanding general to Cavite, who reenforced the native troops, took possession of the fort, and put the rebels to the sword. Sergeant La Madrid had been blinded and badly burned by the explosion of a sack of powder and, being unable to escape, was also cut down. A few of the rebels were captured and taken to Manila and there was no further disturbance of the peace or insubordination of any kind.

This uprising among the soldiers in Cavite was used as a powerful lever by the Spanish residents and by the friars. During the time that General La Torre was chief executive in the Philippine Islands the influential Filipinos did not hesitate to announce their hostility to the religious orders, and the Central Government in Madrid had announced its intention to deprive the friars in these islands of all powers of intervention in matters of civil government and of the direction and management of the university. Moret, the colonial minister, had drawn up a scheme of reform by which he proposed to make a radical change in the colonial system of government, which was to harmonize with the principles for which the revolution in Spain had been fought. It was due to these facts and promises that the Filipinos had great hopes of an improvement in the affairs of their country, while the friars, on the other hand, feared that their power in the colony would soon be completely a thing of the past.

The mutiny in Cavite gave the conservative element—that is, those who favored a continuation of the colonial modus vivendi—an opportunity to represent to the Spanish Government that a vast conspiracy was afoot and organized throughout the archipelago with the object of destroying the Spanish sovereignty. They stated that the Spanish Government in Madrid was to blame for the propagation of pernicious doctrines and for the hopes that had been held out from Madrid to the Filipino people, and also because of the leanings of ex-Governor La Torre and of other public functionaries who had been sent to the Philippine Islands by the Government that succeeded Queen Isabella. The fall of the new rulers in Spain within a few days, as well as other occurrences, seemed to accentuate the claims made by the conservative

element in the Philippine Islands regarding the peril which threatened Spanish sovereignty in the islands; it appeared as though the prophecies were about to be fulfilled. The Madrid authorities were not able to combat public opinion in that country; no opportunity was given nor time taken to make a thorough investigation of the real facts or extent of the alleged revolution; the conservative element in the Philippine Islands painted the local condition of affairs in somber tints; and the Madrid Government came to believe, or at least to suspect, that a scheme was being concocted throughout the islands to shake off Spanish sovereignty. Consistent with the precedents of their colonial rule, the repressive measures adopted to quell the supposed insurrection were strict and sudden. No attempt appears to have been made to ascertain whether or not the innocent suffered with the guilty, and the only end sought appeared to be to inspire terror in the minds of all by making examples of a certain number, so that none in the future should attempt, nor even dream of any attempt at secession.

Many of the best known Filipinos were denounced to the military authorities, and they, the sons of Spaniards born in the islands and men of mixed blood (Spanish and Chinese), as well as the Indians of pure blood, as the Philippine Malays were called, were persecuted and punished without distinction by the military authorities. Those who dared to oppose themselves to the friars were punished with special severity; among others may be mentioned the priests Burgos, a half-blood Spaniard, Zamora, a half-blood Chinaman, and Gomez, a pure-blood Tagálog, who had vigorously opposed the friars in the litigation over the curacies in the various provinces. The three priests mentioned were condemned to death by a military court-martial; and Antonio M. Regidor, a lawyer and councilman of Manila, Joaquin Pardo de Tavera, lawyer and member of the administrative council, P. Mendoza, curate of Santa Cruz, Guevara, curate of Quiapo, the priests Mariano Sevilla, Feliciano Gomez, Ballesteros, José Lasa, the lawyers Carrilo, Basa Enriquez, Crisanto Reyes, Máximo Paterno, and many others were sentenced to life imprisonment on the Mariana Islands. The Government thus secured its object of terrorizing the Filipino people, but the punishments meted out were not only unjust but were from every point of view unnecessary, as there had not been the remotest intention on the part of anyone to overthrow the Spanish sovereignty. On the contrary, the attitude of Moret, Labra, Becerra, and other high officials in the Madrid Government had awakened in the breasts of the Filipinos a lively friendship for the home government, and never had the ties which bound the colony to Spain been as close as they were during the short interval between the arrival of General La Torre and the time when General Izquierdo, in the name

of the home government, was guilty of the atrocities mentioned above, of which innocent men were made victims.

A careful study of the history and documents of that time brings to light the part which the religious orders played in that sad drama. One of the results of the so-called revolution of Cavite was to strengthen the power of the friars in the Philippine Islands in such manner that the Madrid Government, which up to that time had contemplated reducing the power of the religious orders in these islands, was obliged not only to abandon its intention, but to place a yet greater measure of official influence at the service of the friars, and from that time they were considered as an important factor in the preservation of the Spanish sovereignty in the colony. This influence was felt throughout the islands, and not only were the friars taken into the confidence of the Government, but the Filipino people looked upon the religious orders as their real masters and as the representatives, powerful and unsparing, of the Spanish Kingdom.

But there were other results following upon the unfortunate policy adopted by Governor Izquierdo. Up to that time there had been no intention of secession from Spain, and the only aspiration of the people was to secure the material and educational advancement of the country. The Filipino people had never blamed the Spanish nation for the backward condition in which the islands existed, nor for the injustices committed in the islands by the Spanish officials; but on the contrary it was the custom to lay all the blame for these things on the individual officers guilty of maladministration, and no attempt had been made to investigate whether or not the evils under which the islands suffered were due to fundamental causes. The persecutions which began under Governor Izquierdo were based on the false assumption that the Filipino people were desirous of independence, and although this was an unfounded accusation, there were many martyrs to the cause, among whom were found many of the most intelligent and well-to-do people, without distinction of color or race or nationality, who were sentenced to death, to imprisonment, or were expatriated because they were believed to aspire to the independence of these islands. The fear which the people felt of the friars and of the punishments meted out by the Government was exceeded only by the admiration which the Filipino people had for those who did not hesitate to stand up for the rights of the country. In this manner the persecutions to which the people were subjected served as a stimulus and an educative force, and from that time the rebellion was nursed in secret and the passive resistance to the abuses of the official power became greater day by day.

No attempt was made to allay the ill feeling which existed between the Filipinos and the Spaniards, especially the friars, caused by the

mutiny in Cavite and the cruel manner in which the punishment was meted out. Many years would have been necessary to heal the wounds felt by the large number of families whose members were made the victims of the unjust sentences of the military courts-martial. Nothing was done by the Government to blot out the recollection of these actions; on the contrary, it appeared to be its policy to continually bring up the memory of these occurrences as a reminder to the malcontents of what they had to expect; but the only thing accomplished was to increase the popular discontent. It was from that time that every disagreement between the Spaniards and Filipinos, however trivial, was given a racial or political character; every time a friar was insulted or injured in any way, it was claimed to be an act of hostility to the Spanish nation.

The number of Filipino youths who went abroad to be educated increased year by year; and this was another cause for the increase in the public discontent, as the families of these students were made the objects of espionage. The authorities suspected that the students, on returning from abroad, would bring to the archipelago modern political ideas and would become imbued with the revolutionary spirit which had arisen within Spain itself.

Certain Spanish writers believed the moment opportune to inaugurate a literary campaign against the Filipino people. The natives were represented as being so degraded and so inferior in every way to other races that nothing was to be feared from them. In the Philippine Islands nothing could be written or published in opposition to these attacks, inasmuch as the press was subjected to a most rigid censorship; but a nucleus of Filipinos had begun to form in Spain itself, and they boldly took up the defense of their compatriots. Marcelo H. del Pilar established in Madrid a Filipino organ called "*La Solidaridad*," in which brilliant articles appeared, written by Rizal, Jaena, and others. This paper was not allowed to circulate in Manila.

The state of discontent in the Philippine Islands became greater day by day, but the people remained in ignorance of the real cause of their troubles. The work written by Rizal, entitled "*Noli me Tangere*," brushed aside the veil and exposed to the view of all the reason for their suffering and discontent. The young author of this work was a Tagálog and a native of the town of Calamba, in the province of La Laguna. It was a political novel, in which for the first time were presented in their true colors the sufferings which the Filipino people underwent; the character delineations were all true to nature, from the young child to the old man, the obscure types of the lower class and the members of the cultured class. In this book were faithfully portrayed the everyday life and customs of the islands, full of the

poetry of nature. For the first time the attempt at caricature, which the Spanish authors had always used in describing the native peoples, was eliminated. All of the defects of the public administration of affairs, the ignorance of the functionaries and their corruption, the vices of the clergy, the incapacity of the governors, and the inferiority of Spanish culture in these islands were made manifest. The prestige which the friars had enjoyed, and which was based only on the ignorance of the masses, crumbled away when the private lives of the members of the religious orders in the provinces were described in the pages of Rizal's book and the immorality and viciousness of the friars were uncovered to the public gaze. The defects in the system of education pursued in the colleges and in the Filipino university were also exposed and the evil results of the teachings were pointed out. So vividly were the defects in the Spanish colonial administration described that the entire structure tottered, and the prestige which Spanish civilization in the islands had attained up to that time in the minds of the Filipinos was completely discredited. Rizal, with great finesse and ability, contrasted the Spanish system of government and of thought with what was being done and thought in other European countries, especially in Germany, and it can be truthfully said that all who read *Noli me Tangere* from that moment detested the Spanish system of colonization and considered the friars as the greatest obstacles to Filipino progress.

It would seem that this novel and its effect on the public mind would have served as a warning to the Spanish politicians and caused them to modify their program, but quite the contrary was the result. Many prominent Spaniards felt themselves insulted, and ill feeling ran high against the educated Filipinos, who found themselves day by day made the objects of yet greater persecutions and treated as suspects. The Spanish Freemasons, being advised by Rizal, endeavored to organize branch lodges in the Philippine Islands for the purpose of counteracting the intolerance and high-handed proceedings of the Government and of the friars. Their object was to act as intermediaries in a fraternal or protecting character over the Filipinos; but their efforts were doomed to failure, and the suspicion and ill feeling of the authorities toward the Filipino people became yet more aggravated.

The new teaching spread rapidly, and notwithstanding the fact that it was made an offense severely punished by law to read *Noli me Tangere*, the demand for this popular work became greater each day. It was more widely read as the time went by, and was issued in pamphlets and even in loose sheets in the Tagálog and Visayan dialects, into which it had been translated. Rizal soon published the second part,

or sequel to his novel, which he called "*El Filibusterismo.*" In this volume the author presented in a masterly manner a picture of a country on the verge of a revolution; he depicted the Filipino people as a long-suffering race which still believed in the promises of Spain, and he laid the blame for this condition of affairs at the door of the colonial officials, thinking only of politics, deaf to the cries of justice, and blind to the spectacle of a suffering people, which still hoped, but which fast was approaching the point when patience would cease to be a virtue. *El Filibusterismo* was intended as a warning; but Spanish pride would not stoop to recognize it, and the author, who was worthy of the gratitude of Spain and of her sons for what he did to avert a calamity, was considered the worst enemy of Spain.

Before the publication of *El Filibusterismo*, public opinion in the Philippine Islands had been much stirred by an event which occurred in 1888 while General Terrero was governor. The people of Binondo and the friar who acted as parish priest in that town were at cross purposes, and the ill feeling grew to such an extent that a number of Filipinos presented to the governor a petition in which they begged that the archbishop and the religious orders should be expelled from the Philippine Islands. The action of the petitioners was interpreted to mean a threat against the Spanish sovereignty, and at a meeting held by the high officials it was decided to prosecute with the greatest rigor all of the Filipinos who had signed the petition, which was said to be seditious. A large number of well-known persons were arrested and sent to jail, and public attention during many months was fixed on this occurrence. In the investigation and development of this case the government officials preserved the greatest mystery; peaceable, honorable, and respectable people were daily arrested and jailed, accused of the crime of conspiracy; and as though this were not enough to alarm the people, an old claim of the town of Calamba was revived. This was a case where the people of Calamba had brought a suit against the Dominican friars for the purpose of recovering title to certain municipal lands held by that order, and notwithstanding the fact that the trial of the suit was proceeding before the proper courts, Governor-General Weyler intervened, and for the purpose of strengthening the friars' side of the suit he sent an artillery company, composed of Spaniards, who carried their cannon and camping outfit to the town of Calamba. Such of the people in that vicinity as dared to dispute the right of the friars to the lands in question were driven out of the town, their houses burned, and their families persecuted. Rizal's family and other prominent people of Calamba were expatriated, and those who were able to escape arrest took refuge in Hongkong as an asylum from further outrage.

All of these events were narrated without exaggeration and with the utmost fidelity to fact by the author in *El Filibusterismo.* From

all sides were now received reports of occurrences which could be viewed in the light of the precursors of more serious events. During this time Rizal and other educated Filipinos maintained that all that was needed to calm the people was the inauguration of an equitable system of government and justice to all, but the colonial officials, following the political traditions of Spain, were determined to throttle the voice of the people. The most rigorous measures were adopted; the Filipinos were accused of being ingrates and were persecuted as criminals. The authorities refused to listen to or to recognize the true facts and condition of things, and all of the acts of government were directed to the one object of terrorizing the people and to the perpetuation of the Spanish domination over them.

In the hope of being able to secure from Spain the inauguration of certain reforms in the administrative affairs of the colony, Rizal, together with other influential Filipinos, established the Filipino League. The main objects of this society were to secure a system of public schools and the abolition of the monastic orders or annulment of their powers, which they expected to attain through a representation in the Madrid Cortes of duly constituted delegates. The general plan of the movement was to secure the establishment in the colony of the existing system of laws under which the mother country was governed, and they were encouraged to hope for the success of their plans by reason of the policy of assimilation or reconstruction which at that time pervaded Spanish councils.[1] At this time there were also established in Manila and in some of the provinces Masonic lodges of the "*Gran Oriente Español.*" The membership of these lodges increased rapidly, and large numbers of men of all ages and conditions were initiated.

The lower classes had not as yet taken any part in this political movement or in the opposition to the abuses of government, but finally the excesses to which the civil guard went convinced these defenseless creatures that the guardians of the peace had become their most dangerous enemies. The friars had also, by reason of their reprehensible actions, lost their ancient prestige in the various towns; and the people either hated or had lost their previous affection for their spiritual advisers. It was at this moment that Andrés Bonifacio seized his opportunity and organized an association known as "*El Katipunan,*" with the object of uniting the masses of the people and for the purpose of throwing off a galling yoke.

Andrés Bonifacio was about 40 years old, a man of scant education, but cut out by nature as a true organizer of revolutionary movements.

[1] The principal reforms demanded by the Filipinos were expulsion of the friars and restitution of the friar lands to the municipalities; representation in the Spanish parliament; freedom of the press; religious toleration; the laws and jurisprudence of Spain, and equality before the law; administrative and economic autonomy; and abolition of the right to banish citizens.—*Director.*

He was inspired by an exalted patriotism, and was convinced that the Filipinos could not expect any remedy from Spain for the ills which afflicted the people; he was convinced of the absolute necessity for emancipation from Spanish sovereignty and organized El Katipunan as a preliminary step toward that end and for the purpose of affording an opportunity for teaching the masses the principles enunciated by the Filipino League. In the organization of El Katipunan Bonifacio adopted certain of the symbols and methods of procedure from the Freemasons.

The friars and the Spaniards later came to believe that the revolution against the Spanish authority was the work of the Freemasons, but this is an error, inasmuch as it was the members of El Katipunan, under the active and able direction of Andrés Bonifacio, who organized and supported the revolutionary cause. In order to be admitted to El Katipunan the applicant made an incision in his arm and signed his name with his own blood to a sworn statement in which he bound himself to blind obedience to any duty or mission to which he was assigned by the association, to keep secret all that he saw or heard, and to unhesitatingly give all, even his life, for his country.

Bonifacio thoroughly understood the character of the Filipino people and intuitively knew that the moment had arrived in which an appeal to the sentiments and the hearts of the people would be followed by a general uprising and that he would be able to organize a revolutionary movement which would be supported enthusiastically. The events justified this belief.

On August 19, 1896, the priest of the barrio of Tondó, in the city of Manila, learned through the confessional that a vast conspiracy was afoot having for its end the extermination of the Spaniards. Within a few moments the governor-general had been informed of the conspiracy. The government already knew of the secret organizations, and as soon as the details had been learned from the Tondó priest suspected persons in large numbers were arrested and jailed. General Blanco took matters coolly, but when the members of El Katipunan saw that the jails were being filled with their brothers they decided to strike the blow before the date agreed upon.

On August 30 a large body of revolutionists attacked San Juan del Monte, but the Spanish artillery, being well disciplined and supplied with good guns, defeated the revolutionists with great slaughter and made many prisoners. The cruelties committed on that day by the Spanish troops were only what could have been expected by those familiar with the military history of Spain.

There were stationed in Manila only 400 Spanish soldiers and a few native troops, the main body of the troops being occupied in Minda-

nao. The authorities and the Spanish residents in Manila were terrorized by the revolutionary movement, and it was decided to use most repressive measures; the persecution of the suspected parties was at once begun and most of the influential Filipinos were arrested and sent to prison. Valenzuela, Rojos Abella, Franco Salvador, and others were executed, after being sentenced by a military court-martial in which all principles of justice and equity were ignored, for the purpose of satisfying the demands of the resident Spaniards. On December 30, 1896, Rizal was executed, after being condemned by a court-martial, the Spanish troops in triumphal procession passed by his dead body, and the members of the Spanish society who witnessed the public execution cried "Viva España." It was believed that by the death of Rizal the revolutionary movement had been controlled, but in reality his death only served to rupture for all time the bonds which until then had united the Spanish and the Filipino people.

The Manila jails were filled with prisoners. In Fort Santiago 58 men were suffocated to death in a single night in a cell in which the commanding general had placed them. The unfortunate people who were taken to the military prisons were subjected to all kinds of torture, and in all parts of the Philippine Islands were committed acts of true savagery, of which defenseless and loyal Filipinos were made the victims. The real revolutionists had by this time left the towns and taken up arms against the Spaniards.

The province of Cavite was by this time in a general state of revolution, and before the rebellion could be reduced General Lechambre had to take the field with 14,000 Spanish soldiers supported by a squadron under Admiral Montojo. The Spanish forces triumphed in the same waters where within a short time they were to be sunk by Dewey's ships.

Emilio Aguinaldo, with a large band of revolutionists, among whom were natives of great influence, escaped from the Spaniards, crossed the provinces of Cavite and Manila, and fortified himself in the province of Bulacán, at a place called Biacnabató.

General Primo de Rivera, who was governor-general of the Philippine Islands, got General Aguinaldo and his chieftains to agree to a treaty of peace, which was reported to have been signed on December 14, 1897. By the terms of this treaty the Filipinos were promised that the friars would be expelled; that the natives would have freedom of the press and of public assemblage, and would be given representation in the Spanish Congress; amnesty was also promised to all the revolutionists. Aguinaldo and his chieftains on their side agreed to remove to Hongkong on payment of the sum of 600,000 pesos for their arms, ammunition, and other munitions of war which they abandoned at Biacnabató.

Aguinaldo appears to have been certain that a treaty of peace had really been drawn up, but subsequently no one was able to produce the treaty or to prove its existence; it would therefore appear that Aguinaldo and his chieftains were completely fooled regarding this treaty by interested persons in whom they had confidence. Peace reigned for a while after the revolutionary chiefs had left the Philippine Islands, but minor disturbances reported from all parts of the islands indicated that the revolutionary spirit was still kept alive by the people at large.

In 1898, when war between the United States and Spain was declared, General Augustin, then governor of the islands, quickly organized the various corps of militia and put them under the command of the revolutionary leaders who yet remained in the islands. The Spanish governor endeavored to secure the cooperation of the Filipinos in defending the islands against foreign invasion by establishing in Manila a board known as the *asamblea consultiva*, the duties of which were to advise the insular government on all matters of interest to the colony. As had always been done at critical moments, the Government assumed an attitude of generosity toward the people for the purpose of securing their good will and cooperation. But on this occasion, as subsequent events proved, Spanish sovereignty was nearing its end and there was no opportunity to put in operation the time-worn policy of appealing to the forgiving nature of the natives.

On May 1, 1898, Dewey's ships completely destroyed the Spanish squadron in the Philippine Islands, in the harbor of Manila, in the Bay of Bacoor. Cavite capitulated the same day and Manila was completely blockaded as far as communication by sea was concerned. The Spanish troops to the number of 12,000 were at this time distributed throughout Luzón and the other islands. The Filipino militia was composed of 11,000 men, and the colonial government was confident that the natives would believe in the promises of autonomic government and would take sides with Spain and against the American invaders; but on May 19 General Aguinaldo landed at Cavite, and within fifteen days thereafter all of the Filipino militia had rebelled against Spain, and the militia forces were so disposed that Manila was completely cut off from all communication by land, and the blockade was now complete.[1]

[1] The first expeditionary force, under the command of Maj. Gen. Wesley Merritt, U. S. Army, arrived in the harbor of Manila June 30, 1898. Cavite was occupied July 1, and on July 12 Parañaque, 7 miles south of Manila, from which point the advance against the city was commenced. On August 14 General Merritt issued the following proclamation:

To the people of the Philippines:

"1. War has existed between the United States and Spain since April 21 of this year. Since that date you have witnessed the destruction by an American fleet of the Spanish naval power of these islands; the fall of the principal city, Manila, and its

On the surrender of Manila General Aguinaldo soon organized a provisional government at Bacoor; in September he removed his forces to Malolos, where the seat of the revolutionary government was established.

When the Paris Treaty of Peace was published in January, 1899, by General Otis, it created great dissatisfaction among the Filipinos, who believed that the intention of the United States in destroying the Spanish sovereignty was to secure the independence of the Philippine Islands; the fight against the Americans was then resumed with greater energy by the Filipino people. On February 4 of the same year hostilities were inaugurated, and from that time the American Army began the conquest of the archipelago.

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defenses, and the surrender of the Spanish army of occupation to the forces of the United States.

"2. The commander of the United States forces now in possession has instructions from his Government to assure the people that he has not come to wage war upon them nor upon any party or faction among them, but to protect them in their homes, in their employments, and in their personal and religious rights. All persons who by active aid or honest submission cooperate with the United States in its efforts to give effect to this beneficial purpose will receive the reward of its support and protection.

"3. The government established among you by the United States Army is a government of military occupation; and for the present it is ordered that the municipal laws such as affect private rights of persons and property, regulate local institutions and provide for the punishment of crime, shall be considered as continuing in force, so far as compatible with the purpose of military government, and that they be administered through the ordinary tribunals substantially as before occupation, but by officials appointed by the government of occupation.

"4. A provost-marshal-general will be appointed for the city of Manila and its outlying districts. This territory will be divided into subdistricts, and there will be assigned to each a deputy provost-marshal.

"The duties of the provost-marshal-general and his deputies will be set forth in detail in future orders. In a general way they are charged with the duty of making arrests of military as well as civil offenders, sending such of the former class as are triable by courts-martial to their proper commands with statements of their offenses and names of witnesses, and detaining in custody all of the offenders for trial by military commission, provost courts, or native criminal courts, in accordance with law and the instructions hereafter to be issued.

"5. The port of Manila, and all other ports and places in the Philippines which may be in the actual possession of our land and naval forces, will be open while our military occupation may continue, to the commerce of all neutral nations, as well as our own, in articles not contraband of war, and upon payment of the prescribed rates of duty which may be in force at the time of the importation.

"6. All churches and places devoted to religious worship and to the arts and sciences, all educational institutions, libraries, scientific collections, museums, are, so far as possible, to be protected; and all destruction or intentional defacement of such places or property, of historical monuments, archives, or works of science, is prohibited, save when required by urgent military necessity. Severe punishment will be meted out for all violations of this regulation.

"The custodians of properties of the character mentioned in this section will make prompt returns thereof to these headquarters, stating character and location and embodying such recommendations as they may think proper for the full protection of the properties under their care and custody, that proper orders may issue enjoining the cooperation of both military and civil authorities in securing such protection.

"7. The commanding general, in announcing the establishment of military government and in entering upon his duties as military governor in pursuance of his appointment as such by the Government of the United States, desires to assure the people that so long as they preserve the peace and perform their duties toward the representatives of the United States they will not be disturbed in their person and

The American conquest of the Philippine Islands may be considered as having been completed by the year 1901, in which year a commission from Washington arrived in Manila for the purpose of organizing a local civil government. In December of the same year the Federal party, the first political organization, was formed; the main object of this organization was to bring about peace in the islands and to cooperate with the commission, of which the Hon. William H. Taft was president.

With the exception of a part of the island of Mindanao, of the island of Joló, and other small islands which belong to the Moro province, peace has been reestablished throughout the archipelago.

Although the ambition of a large majority of the Filipinos is still for independence, yet the educated class who so thinks is convinced that independence may be secured at the proper time by legal means, and that a revolution or any appeal to arms would be harmful to the interests of the people of the Philippines.

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property, except in so far as may be found necessary for the good of the service of the United States and the benefit of the people of the Philippines."

General Merritt remained in command and exercised the functions of military governor until August 29, when he was relieved by Maj. Gen. E. S. Otis, who was succeeded by Maj. Gen. A. MacArthur, May 5, 1900.

The insurrection of the Filipinos against the Government of the United States culminated on February 4, 1899, in the general attack made on Manila, and from that time on hostilities existed in all the larger islands, notably in Luzón. On July 4, 1901, Maj. Gen. A. R. Chaffee relieved General MacArthur, and the military government of the islands was replaced by civil government, except in the Sulu archipelago and all of Mindanao but the provinces of Surigao and Misamis, which remained under the administration of the military governor and commanding general until June 1, 1903, when the Moro province was organized.—*Director.*

II. THE JUDICIARY.[1]

Early Government—Oppression—Courts of First Instance—Municipal Courts—Special Courts.

In the royal order of August 14, 1569, confirming the title of Legaspi as governor and captain-general of the Philippines, he was empowered "to administer our civil and criminal justice in company with the officers of justice who may be appointed; also to hear, examine, and decide any civil and criminal suit or case which may arise in the said islands."

He was also authorized "to fill the offices of governor and captain-general, constable, and other offices annexed and suitable to your government, and to dismiss and remove these subordinates whenever you desire. And you may hear, examine, and decide any civil or criminal suit or case that may arise in the said islands." It was made the duty of all municipal bodies, courts, magistrates, knights, squires, cities, towns, and hamlets to acknowledge the authority conferred on him.

To assist the governor in judicial matters before and after the abolition of the audiencia, there was a lieutenant-assessor or legal adviser, whose office was given, in 1593, the title of lieutenant-general of the governor and captain-general, and who in judicial matters "heard causes in appeal which did not exceed a thousand ducats of Castile."

Under this order Legaspi had original and appellate jurisdiction in all suits, and constituted in his own person all the authority of a department of justice, with complete governmental and administrative control over all judicial offices.

In subsequent cédulas and orders it was made the duty of all officials having authority, to enforce the royal laws and ordinances issued in behalf of the natives, but they do not appear to have done so. In a letter from Manila, 1583, to Philip II, Bishop Salazar[2] wrote:

Since Your Majesty orders by your royal decree that in case the governors do not keep the royal laws and ordinances which are made for these lands, I advise Your Majesty of the fact; what might in compliance be said with entire truthfulness is,

[1] As the judiciary exercised an important influence on the executive government of the Philippines, of which for many years it formed a part, it is appropriate that a brief account of this branch of the government should be included in the general history of the islands. The following sketch was compiled partly from articles written by Chief Justice C. S. Arellano and Associate Justice F. Torres, of the supreme court, and from royal decrees, orders, and cédulas, the acts of the Philippine Commission, and various historical works.—*Director.*

[2] Bishop Salazar arrived in Manila in March, 1581, and was the first bishop and first archbishop of the Philippines. He died in Spain, 1593.—*Director.*

that I do not know what decree, provision, or ordinance issued for the benefit and aid of the Indians is kept or noticed, and if any promise is made, it is only for courtesy. Never have I seen any man punished who may have violated the decrees or who may be scandalous in sin.

It was fortunate for the natives that Bishop Salazar arrived when he did. Through his carefully prepared and voluminous reports the King was kept fully informed of the many acts of oppression suffered by the Filipinos at the hands of the encomenderos and government officials from the captain-general down. The cruelty and injustice shown the Indians took various forms, but was chiefly connected with service in the galleys, enforced labor without compensation, ordered by the alcaldes, the enforced contributions of rice for a portion of its value, the collection of tribute, and slavery. Of the galleys, the bishop wrote:

The Indians are put into irons on the galleys and flogged as if they were galley slaves, or prisoners; moreover, the pay that is given them is very small, for they give each man only 4 reals a month, and that is so irregularly paid that most of them never see it. The officials of the villages from which they take the rowers divide the pay among themselves, or give it to those whom they impress as oarsmen.

Of the enforced sales of rice, etc., he wrote:

Another injury that they do this poor people under pretense of its being for Your Majesty, whereby your royal name is detested among them, is as follows: Formerly, when rice was plentiful, 400 gantas (3 liters) were worth 1 tostón (4 reals). * * * Last year the governor ordered that 12,000 fanegas (19,200 bushels) of rice be taken from La Pampanga, and that the Indians should give 300 gantas for 1 tostón. It was then worth among them about a peso of gold, because it could not be had at any price. Many Indians died of hunger.[1] The 300 gantas which they took from them were worth about 6 tostóns. * * * At the season when this was collected I was visiting La Pampanga, and I saw so much weeping and moaning on the part of the wretched Indians from whom they took the rice that it moved me to great pity. * * * As for the means of collecting the rice, the alcalde mayor or his deputy * * * orders that so many gantas of rice be collected for 1 tostón. Afterwards they send to collect this rice men without pity, who, with blows, torture, and imprisonment, enforce compliance with the rate of 350 gantas for a tostón. It is a fact well established, for I have learned from the very persons who collect it that it often happens that the Indian, not having so much rice as is demanded, is obliged to buy at the rate of 50 gantas for a tostón and 15 gantas of wine; and from him, as is said, they take 250 of rice and 70 of wine for 1 tostón. * * * I know that many alcaldes mayores, having orders from the governor to buy from the Indians of their district 300 fanegas from each single man and 500 from each married man, take it at the aforesaid price, and even much more than they are permitted to take, and sell it at the current price.

In regard to the collection of tribute, he wrote:

Here my senses fail me. I lack the courage, and I can find no words to express to Your Majesty the misfortunes, injuries, and vexations, the torments and miseries which the Indians are made to suffer in the collection of tribute. The tribute at

[1] This is extremely doubtful. There are so many substitutes for rice which are within the reach of the poorest Filipino, that death from starvation is practically unknown.—*Director.*

which all are commonly rated is the value of 8 reals, paid in gold or in produce which they gather from their lands; but this rate is observed like all other rules in favor of the Indians; that is, it is never observed at all. * * * They collect tribute from children, old men, and slaves, and many remain unmarried because of the tribute, while others kill their children. Some they try to compel to pay in gold, even when they do not have it. * * * Others make them pay cloth or thread. But the end is not here, but in the manner of collecting, for if the chief does not give them as much gold as they demand, or does not pay for as many Indians as they say there are, they crucify the unfortunate chief, or put his head in the stocks—for all the encomenderos, when they go to collect, have their stocks, and then they lash and torment the chiefs until they give the entire sum demanded from them. Sometimes the wife or daughter of the chief is seized when he himself does not appear. Many are the chiefs who have died of torture in the manner which I have stated. * * * What the encomendero does after having collected his tribute in the manner stated is to return home, and for another year he neither sees nor hears of them. He takes no more account of them than if they were deer until the next year, when the same thing is repeated.

Concerning slavery, Bishop Salazar declared that notwithstanding the many prohibitive decrees, no attention was paid to them by the governor, nor to the last decree in particular, ordering with much vigor and in strong terms that the Spaniards should at once liberate the slaves.

From the foregoing account of Bishop Salazar, it is evident that the Filipinos were subjected to all kinds of oppression having in view their spoliation, and that the decrees of the King, which were designed to protect them, were generally disregarded by the governor-general and his subordinates. From his authority there was no appeal in the Philippines, although recourse might be had to the audiencia in Mexico, involving years of delay. As a result, and to place a check on the power of the governor-general, the first audiencia or high court was established by the royal decree of May 5, 1583. This decree states that the court is founded "in the interests of good government and the administration of justice, with the same authority and preeminence as each of the royal audiencias in the town of Valladolid and the city of Granada."

Embraced in and forming part of the audiencia was the chancellery, which had cognizance of cases on appeal, cases of nobility, and cases regarding the inheritance of entailed property.

The audiencia consisted of a president, three oidores,[1] or auditors, a fiscal, or prosecuting attorney, and the necessary auxiliary officials, such as secretaries and clerks. The first president was Dr. Santiago de Vera, alcalde of the high court of Mexico, who arrived in Manila with the seal of the court May 29, 1584.

The audiencia had as its district "the island of Luzón and the other

[1] An oidor, auditor or associate justice of the audiencia, was something more than a judge, exercising, besides the judicial functions, those of governmental and civil administration.—*Director.*

Filipino islands of the archipelago of China, and the mainland of the same, whether discovered or to be discovered." It was given jurisdiction of all the civil and criminal cases which might come to it on appeal from the governors, alcaldes mayores, and other magistrates of the provinces and islands, the same to be tried by examination and review, but was denied jurisdiction over any case in the first instance, "except cases which, on account of their importance, the amount involved, and the dignity of the parties, might be tried in a superior court, and criminal cases arising in the place where the court might meet."

The judgments of the audiencia in civil and criminal cases were to be executed without appeal, except when the amount in a civil case was so large as to justify an appeal to the King, to be presented within one year. Meanwhile, the judgment of the audiencia was to be executed, the party in whose favor it was rendered giving a sufficient and satisfactory bond that should the judgment be reversed he would restore everything.

All cases were to be decided by a majority vote, and in case of a tie an advocate was chosen for the determination of the case.

When charges were made against the governor, and the matter appeared to be of such a nature that it was of importance that the audiencia should know the truth, it was given authority to send a person to obtain the necessary information, the complainant giving bonds to pay all costs and the penalty in case the accusation proved false. No auditor could sit in a case affecting his wife, son, father, son-in-law, or brother, or when challenged; neither could the auditors receive any fee, fine or amercements, or anything under cover of charges for court service; nor could they have any share with an advocate or commissioner in his fees or pay; nor have income-bearing estates in arable land, or cattle; nor engage in mercantile business, singly or in partnership, or through intermediaries; nor avail themselves of the services of Indians, on pain of being deprived of their offices. Neither could the son, brother, father-in-law, son-in-law, or brother-in-law of any member of the audiencia or fiscal be appointed corregidor or other officer of justice.

Any person could bring suit against an auditor before the audiencia, or before the alcaldes-in-ordinary, with right of appeal from the alcaldes to the audiencia, and the president of the audiencia was required to try criminal charges against the auditors thereof jointly with the alcaldes.

The president and auditors were required to be present every day, not a holiday, for three hours in days when cases were not heard and four hours when hearings were given, under penalty of half a day's pay for each absence.

The audiencia was given jurisdiction over all crimes of falsification of money committed by the "moneyers" of the mint. It could grant no writ of delay in cases of debt, except for six months to particular persons who gave security for the debt. Writs of execution, prohibition, and other writs could be granted under certain conditions. When any governor, or alcalde mayor, or other magistrate failed to execute the writs and decrees of the audiencia without just cause, the audiencia was empowered to send other officials at the cost of the disobedient ones to execute the writs, etc.

On Saturday of every week two auditors were required to inspect, together, the prison of the audiencia and the prison of Manila.

In addition to its functions as a court of justice the audiencia performed a variety of important duties, which were conferred upon it in the original decree establishing it. In case of the inability of the governor to carry on the government the audiencia was empowered to assume the government, the senior auditor filling the office of president; the latter was forbidden to grant permission to the auditors to visit Spain. It was required to keep a registry of all questions which came before it pertaining to the government, and of the votes cast by each member of the court. The president of the audiencia was required to send a list, annually, to the council of the Indies, of the salaries, payments, fees, and allowances paid to the district of the audiencia from the royal treasury, of all persons whomsoever, stating how much was paid to each, and for what reason. He was required to send a list of the corregidores, stating who were appointed by royal warrant, and who by order of the president and audiencia, giving the qualifications and merits of each person, the amount of fees each received, the amount of salary in each corregidor's district, the nature of the service, and the date of appointment. He was prohibited from granting any fees or other source of profit to any encomendero, and from permitting merchants to raise their prices on merchandise above that ordained and commanded by the King. All persons desiring to petition the King for any favor, for services not performed in the Indies, were required to make declaration before the audiencia, and the latter made an official report of the services performed, and of the character of the petitioner, which was forwarded to the council of the Indies.

The audiencia had authority to grant licenses to make *repartimientos*,[1] but only so far as they were concerned in suits pending before it, and for public works for which no other maintenance was provided; the president of the audiencia had joint authority with the *cabildo* (corporation) of Manila, in granting town lots or agricultural lands within

[1] See note 3, page 312.

the city limits; also in the assignment of land and water for machinery. The audiencia was required to keep a record book, in which was entered the names of all the citizens of the territory, the service performed by each one, and the reward received by him, either in money or by way of fees.

Each of the auditors in turn was required to visit, once a year, the villages of the district of the audiencia, in the course of which he inspected all the inns and apothecary shops, examined the nature of the soil, determined the amount of the population, the condition of public buildings, and what buildings were needed for the good of the towns; whether the natives were living in idolatry, how the various officials performed their duties, whether slavery existed contrary to orders, whether the natives were properly instructed in doctrine, and, in fact, everything pertaining to the welfare of the places visited by him.

The audiencia was given authority to summon the citizens of the islands, either in peace or war, under penalty of infamy if they disobeyed. The judges in turn were required to audit the accounts of the corporation of the city of Manila.

The president and two auditors were required to audit the accounts of the royal treasurer annually, sending a report to the council of the Indies. They were given other supervision over the royal treasury, and were required to weigh and count the gold and silver and other property when the accounts were audited. The audiencia had power to order payment in exceptional cases from the treasury, where delay would cause injury. It was also given jurisdiction in probate cases, and was required to be informed of the crimes and abuses which might be committed against the Indians, especially by those persons who were granted encomiendas; to see that the Indians received proper instruction in doctrine, etc.; to keep a record of all the suits and transactions of the royal exchequer, and no official of the royal treasury could absent himself from Manila without the authority of the president of the audiencia; to have supervision over the weights and measures and of the execution of ordinances made for the provinces; and to have jurisdiction in cases of unlawful procedure on the part of ecclesiastical judges in hearing of cases which did not come within their jurisdiction, and on the observance of rules of procedure or an unjust refusal to allow an appeal. Also, when there was any doubt as to the signification of anything in the contents of an ecclesiastical appointment, or as to the requisite collation at the hands of the bishops, of benefices for the clergy, the president of the audiencia was to decide it.

The decree defines in great detail a variety of forms of procedure, the duties of the fiscal, the alguacil mayor and his deputies, the clerks

of the audiencia, the official reporters, the advocates, attorneys, who were all examined and licensed by the court, commissioners, bailiffs, jail wardens, and interpreters, together with a tariff of fees, rules for taxing costs, and provision for the preservation of the archives.

Such, in brief, were the principal functions imposed upon the audiencia which were not only judicial in character, but reglementary or legislative, and administrative.

Constituted as it was with the governor-general as president, and with supervisory jurisdiction over all branches of the government, dissatisfaction and violent dissensions were to be expected, and soon arose. At the outset a dispute occurred with Bishop Salazar concerning the wording of certain prayers in the mass, and as to which side of the altar the president, auditors, and the bishop should sit during mass. This was settled arbitrarily by the audiencia in its favor.

Discord, however, soon arose between the president and the auditors. Whether certain offices should be filled by the audiencia, or by the president alone, was a source of contention, and questions of a similar character relating to jurisdiction also provoked ill feeling.

Before long opposition to this form of government took definite shape. The religious orders resented interference with the control previously exercised by the several provincials; the master of the camp and the captains of the four companies composing the garrison of Manila complained to the King, in a letter of June 24, 1586, that, owing to the interference of the audiencia in the administration of the troops, and the unfair bestowal of encomiendas on those who did not deserve them, the men took no pride in their military service, were arrogant and disobedient, and had publicly insulted and attacked their officers. This serious condition they declared would continue as long as the audiencia remained; the cabildo of Manila petitioned the King to substitute a single governor for the audiencia, which experience had demonstrated could not be continued without the total destruction of the state, and for the maintenance of which no funds pertaining to the King existed. Finally, a general junta, which was convened in Manila, July 26, 1586, consisting of the governor and members of the audiencia, the bishop and provincials of the religious orders, the cabildo of the city of Manila, the captain of the camp and two other captains in behalf of the army, and the leading business men, united in a memorial to the council of the Indies, to be delivered by Father Alonzo Sanchez, S. J., special envoy, which dealt generally with all the abuses in the colony and suggested appropriate remedies. Referring to the audiencia it said:

> The citizens of this city and of these islands are very few and poor to carry so great a burden as the royal audiencia and the numerous expenses caused and incurred by its officials. Accordingly, if there are any reasons why the audiencia should remain, His Majesty should allow their salaries to be paid from the treasury of Mexico.

Father Sanchez proceeded to Mexico, Seville, and Rome, and, in consequence, the audiencia was abolished by a royal cédula of the 9th of August, 1589, and Gomez Perez Dasmariñas was appointed governor. He is represented in history as a man of intelligence, of strong personality, and as having done much for the Philippines. He had not been long in office, however, before he became involved in serious contentions with Bishop Salazar, of Manila, or before the absence of the audiencia as a restraint on the unlimited power of the governor began to be felt generally.

So incensed was the bishop at the indignities and mortifications he met with, that, notwithstanding his age, 78, he resolved on presenting his grievances to the King. The chief request urged by him was the reestablishment of the audiencia, in which he was seconded by the city of Manila.

Accordingly, by the royal decree of May 25, 1596, the audiencia-chancellery was again established in Manila, with the same functions as before. Two years later, viz, on May 8, 1598, the royal seal of the audiencia was formally received, and it resumed its functions. When the royal audiencia was discontinued, the licentiate, Herver del Coral, as lieutenant-assessor, took charge of all the offices of the court in matters of justice. The following year, Pedro de Rojas, the senior auditor, was made lieutenant-assessor. On the death of the governor-general, Pérez Dasmariñas, in 1593, Rojas acted as governor ad interim, for forty days, until the arrival of Don Luis Dasmariñas. The same year, 1593, the council of the Indies, with the royal approval, provided that the office of lieutenant-assessor in judicial cases, which had been filled by the licentiate, Rojas, since the abolition of the audiencia, should be made more important than it then was, and that it should have the title of lieutenant-general of the governor and captain-general, and that in matters of justice he should hear cases in appeal which did not exceed the value of 1,000 ducats of Castile. De Rojas was promoted to the office of alcalde of Mexico, and Dr. Antonio de Morga took his place as lieutenant-general. He entered on his duties in June, 1595, and continued in office until the reestablishment of the audiencia in 1598.

In his letter of instructions to the governor and captain-general, of May 25, 1596, the King said:

And inasmuch as I have ever exercised especial care in maintaining all the kingdoms and provinces subject to me, in peace, tranquillity, and justice, for this same purpose and object, I established an audiencia in that city and province, in order that everything might be governed by means of it, and justice administered with the universal equality, mildness, and satisfaction desirable. After its establishment I ordered it suppressed, as experience proved it to be unnecessary in a land so new and unsettled. In its place I sent a governor, and although his administration was excellent, yet inasmuch as that community had grown, and it is hoped will continue to grow, I have thought it advisable to found and establish the said audiencia again.

As reestablished the audiencia consisted of a president (the governor), four associate justices (oidores), a prosecuting attorney (fiscal) with the office of protector of the Indians, the assistant prosecuting officers, a reporter, clerk, and other officials.

In the tenth and eleventh volumes of the History of the Philippines, by Blair and Robertson, will be found many of the ordinances enacted by the audiencia at that time, from which some idea of its functions as a reglementary or legislative body may be formed. These ordinances related to the Chinese, notaries, the prison warden, hucksters, embarkations for the purpose of leaving the islands, the breeding of fowls, the collection of tribute, slavery, regulating the sale of market supplies of Manila, importations of market supplies, ordering all unemployed natives to leave Manila, etc. Very little of importance which was entrusted to the governor and captain-general, or to any other official by the King, was beyond the supervision of the audiencia, whose advice or consent was sought in all public measures.[1]

No change appears to have taken place in the organization and powers of the audiencia until the year 1776, when, by a royal order of March 11, it was to consist of one president, one regent, the immediate head of the audiencia, five oidores or associate justices, one assistant to the head chancellor, two prosecuting attorneys, two assistant prosecuting attorneys, five subordinate officials, and two reporters.

As already stated, the audiencia embraced a chancellery, and exercised administrative control over all inferior courts, magistrates, etc. It also performed the duties of a probate court in certain cases. When acting in a governmental, administrative, or advisory capacity, that is for the consideration of matters not civil nor criminal, the audiencia acted under the name of *real acuerdo*.[2] Upon such occasions all the members and the prosecuting attorney were present, and the decisions, decrees, or ordinances of the audiencia had the force of law when approved by the president and captain-general. Such decrees or decisions were known as *autos acordados*. They have been collected and bound, and were formerly used as precedents in the courts of the Philippines.

From the foregoing it would appear that the audiencia could resolve itself into a court of justice for the consideration of civil or criminal cases, into a chancellery, and into the real acuerdo. Up to October 16, 1840, the ministers of justice had discretionary power over the

[1] This decree states that, "in matters and cases of importance which may arise relating to government the president-governor is to act thereon, together with the oidores, in order that the latter may express their opinions in an advisory capacity, and after having heard them he shall take such steps as may be most suitable to God and ourselves and conducive to the peace and tranquillity of the province and republic."—*Director.*

[2] Literally royal resolution.—*Director.*

retention or dismissal of justices and judges, and their transfer (with all the attending expense) between the colonies and peninsula, thus subjecting them to influences from which they should have been absolutely free. By a royal order of that date, which was strongly sanctioned and emphasized in subsequent laws and decrees in deference to a popular demand, the irremovability of judges and justices, except for cause, was established for the first time.

By the royal cédula of January 30, 1855, the audiencia consisted of a president (the governor), one regent, the real head of the audiencia, seven associate justices, two of whom were judge-advocates, one of the army and one of the navy, one prosecuting attorney for criminal and one for civil cases, with the usual clerks, reporters, etc.

As organized by this decree, the audiencia continued until 1870, there being no changes of importance during this period, although slight modifications were made from time to time in its functions, which were approved by a royal decree of 1868.

The royal decree of July 4, 1861, was noteworthy because by it the governor-general ceased to be president of the audiencia, and the real acuerdo was suppressed, its place being taken by the council of administration, an advisory or consultative body, which had been established by the royal decree of June 4, 1816, and over which the governor-general presided.

After the abolition of the real acuerdo the audiencia in banc constituted the gubernative branch under the presidency of the regent, whose title was subsequently changed to president.

By the royal decree of October 24, 1870, the audiencia consisted of a president, two presidents of the two branches,[1] eight associate justices, one prosecuting attorney, one assistant prosecuting attorney, four deputy assistant prosecuting attorneys (*abogados fiscales*), and the usual clerks, reporters, etc. By this decree the judge-advocates of the army and navy ceased to be members of the audiencia. This decree sanctioned the royal order of 1840 establishing the irremovability of the judges and justices.

By the royal decree of May 23, 1879, the names of the two branches of the audiencia were changed to the *sala de lo civil* and *sala de lo criminal* (civil and criminal chambers), with a presiding judge for each chamber.

By the royal decree of November 4, 1879, the judge-advocates of the army and navy were made members ex officio of the civil chamber whenever it was called upon to decide questions of jurisdiction between civil and military courts or between the military and naval courts.

[1] For judicial purposes the audiencia was divided into two branches, the first or criminal branch and the second or civil branch. The judge-advocates of the army and navy were members of the first branch.—*Director.*

No further change appears to have taken place until May 29, 1885, when by a royal decree of that date the personnel of the audiencia was changed, and the organization was as follows: One president; the civil chamber, with one president and four auditors, or justices; the criminal chamber, with one president and four justices. Supplementary justices were appointed annually by the home government, on motion of the audiencia, of whom there might not be less than two, or more than half the regular justices.

During the period from 1869 to 1886 the functions of the audiencia were changed considerably. By the royal decree of February 7, 1869, the contentious administrative jurisdiction exercised by the council of administration, under the decree of July 4, 1861, was transferred to the administrative branch of the audiencia, consisting of the president, the presidents of the two chambers, and the prosecuting attorney. This special jurisdiction continued to March 19, 1875, when by a royal decree of that date it reverted to the council of administration.

Another change was the extension of the jurisdiction of the audiencia to certain cases, previously vested in special tribunals, to which reference will be made later. The business of the audiencia was strictly divided between the two chambers, according as it was of a civil or criminal character, while the gubernative branch, composed of the president, the two presidents of the civil and criminal chambers, and the prosecuting attorney, exercised administrative supervision and control over the judiciary and the interior economy of the department of justice.

With reference to the external organization and administration of the department of justice as a whole, the audiencia in banc acted. It also had original jurisdiction in certain criminal cases, with appeal to the Supreme Court in Spain.

By the royal decree of February 26, 1886, the territorial audiencia of Cebú was established and began its functions July 1. It was composed of one chief justice, one presiding judge of chamber, four associate justices, one prosecuting attorney, one assistant prosecuting attorney, one deputy assistant prosecuting attorney, two secretaries of chamber, and the usual clerical force. The jurisdiction of this audiencia extended over the islands of Cebú, Negros, Panay, Sámar, Paragua, Calamianes, Masbate, Ticao, Leyte, Joló, and Balábac, with the smaller and adjacent islands.

The royal decree of September 24, 1889, reestablished in all its force the irremovability of judges, which is so necessary to the independence of courts, and which had suffered many vicissitudes up to the point of being annulled in practice since the law of 1870.

By the royal decree of January 5, 1891, two territorial audiencias were established, one in Manila and one in Cebú, with the organiza-

tion given them by previous decrees already quoted. This decree was notable as defining in great detail the powers and duties of the audiencia, the territory and courts of first instance subject to their jurisdiction, and all other matters comprised in the judiciary of the islands.

By the royal decree of May 19, 1893, the territorial jurisdiction of the audiencia of Manila was continued, while the audiencia of Cebú ceased to be territorial, but remained an audiencia for criminal cases only. At the same time a criminal audiencia was established in Vigan, having the organization of the audiencia of Cebú, viz, one president, two associate justices, a prosecuting attorney, an assistant prosecuting attorney, and a secretary, with the necessary clerks, etc.

These audiencias were in operation at the outbreak of the Filipino rebellion, 1896.

COURTS OF FIRST INSTANCE.

As has been stated already by Mr. Pardo de Tavera in his historical sketch, the Spaniards on their arrival in the Philippines found the people "divided into town groups, each having its own government."

These groups or clans, called barangayes,[1] were governed by a chief of barangay called a dato, rajá, or sultan, whose office was hereditary, and who exercised despotic control over the barangay.

Whenever a crime was committed, or there were differences between members of the barangay in respect to property, or other interests, the chief made investigation, heard the witnesses, and judged the case according to ancient usage or precedent. When the litigants belonged to different barangayes, or the controversy was between two chiefs, arbiters were chosen, who gave judgment according to custom. There were no written laws, and fines and death were the usual punishments. If a fine was not paid it resulted in the slavery of the delinquent and eventually of his children, if he had any.

As the conquest and pacification of the islands proceeded, Legaspi and his successors granted encomiendas of Indians to the Spanish soldiers and officials, who, as encomenderos, exercised all the functions of governors, civil administrators, and judges.

After a short time, provinces and pueblos were formed, the first being governed by alcaldes mayores, who were civilians, and frequently were favorites without any knowledge of the law, or by politico-military governors, who were military men, and the second by petty governors. These were appointed by the governor-general, and exercised the powers of governors as well as judges, having original juris-

[1] The barangay, as a political unit, was preserved by Legaspi, and all succeeding governors, to the time of American occupation. It consisted of from 50 to 150 families under the cabeza de barangay, who was elected by the municipal council, and 12 delegates from the principalia of the province.—*Director.*

diction until the separation of the functions of governor and judge by the formal establishment of courts of first instance, in 1870.

By the royal order of December 11, 1830, the provinces were classified as governments by alcaldes mayores, who were civilians, and politico-military governors, who were soldiers; and by the decree of September 23, 1844, the alcaldes were divided into three categories, viz, entrance, promotion, and final. It was provided that no one should hereafter be appointed alcalde mayor in the Philippines unless he was an attorney with practice as a lawyer for ten years, or had filled an office where such qualifications were required. Promotion from the lowest to the highest category by successive steps was contingent on three years' service in each, and alcaldes mayores of the final or highest category after three years' service in that grade were eligible for appointment as justices.

The same decree made provision for lieutenant-governors in all provinces where there were military governors or politico-military governors, or alcaldes mayores appointed by the Spanish minister of war. The lieutenant-governors were divided into categories corresponding to the alcaldes mayores, and were given ordinary jurisdiction in first instance, and were ex officio assessors of the respective governors in matters under their jurisdiction. They were to be promoted as were the alcaldes mayores through the three categories. Service in the judiciary of the Philippines was limited to ten years.

By the royal decree of January 27, 1854, reorganizing the alcaldes mayores in the Philippines, it was ordered that "the offices of alcaldes mayores shall be given to judges who are lawyers and who shall have served as lieutenant-governors in said islands." All the alcaldes mayores were reduced to two categories, entrance and final. By the royal decree of September 1, 1859, the office of civil governor of the province of Manila was created, and the jurisdiction of the alcaldes of Tondó and of a fourth established later, was confined to the administration of justice.

By the royal decree of June 30, 1860, additional alcaldes were authorized, but their functions were entirely judicial, and they could exercise no governmental powers. This was the beginning of the separation of the judicial from the executive branches which was soon after made applicable to the governor-general as president of the audiencia, and to which reference has already been made.

By the royal decree of October 25, 1870, the Spanish colonial provinces were, for judicial purposes, divided into *distritos* (districts), *partidos* (judicial districts), and *terminos municipales* (municipal districts). Each district was given an audiencia (already existing in the Philippines in Manila), each judicial district a court of first instance, and each municipal district a justice of the peace. The Philippines

constituted a single district; the audiencia and courts of the first instance continued their functions until by a subsequent decree the number and limits of the judicial districts were fixed.

By the royal decree of February 26, 1886, civil governorships were established in eighteen provinces, and the alcaldes mayores of these provinces, as well as those under politico-military governors, ceased to exercise the functions of government and administration, which thereafter devolved on their respective governors "assisted by the administrative personnel which may be considered necessary." The classification of the judges into three categories, entrance, promotion, and final, created in 1844, was continued, the classification depending on the wealth, population, and importance of the provinces.

These reforms marked the theoretical separation of the judicial and executive powers in the provinces, and the ordinary jurisdiction and functions of a judge of first instance devolved on an alcalde, who was a lawyer. Some of the governors and politico-military governors continued to exercise the functions of judges of first instance, assisted by assessors, who were lawyers appointed to aid and advise them in legal matters, and this was practically the case at the date of American occupation. Courts of first instance, governors, and politico-military governors exercising such functions took cognizance of all civil and criminal cases arising within their territories, except such cases as were under ecclesiastical or other special courts and the audiencias, and gave judgment in all civil cases in which the amount of property or other interest involved exceeded 200 pesos fuertes, or 1,000 pesetas. The correctional supervision of judges of first instance for offenses or crimes in office was vested in the audiencias, with appeal to the Supreme Court in Spain. In ordinary offenses having no connection with their official character they were triable before the ordinary courts.

JUSTICES OF THE PEACE OR MUNICIPAL COURTS.

As has been stated already, the pueblos or municipalities were under petty governors, who were local judges or justices of the peace in their respective municipalities. Their powers and duties were defined in the auto acordado of the audiencia of Manila, of August 31, 1860, approved by the royal decree of January 18, 1865. In civil suits their jurisdiction was limited to cases where the property or interests involved did not exceed 44 pesos, and to minor offenses the penalty for which did not exceed ten days' confinement, or a fine of 5 pesos.

By the royal order of May 29, 1885, confirmed by the royal order of January 24, 1887, and in pursuance of the general plan of separating the judicial and executive powers, even in the lower grades, as a concession to public opinion, it was prescribed that in each judicial district of the city of Manila, and in every municipality the seat or

headquarters of a judicial district, there should be a justice of the peace, with the jurisdiction and powers conferred by the laws of civil and criminal procedure. The judges were to be appointed by the governor-general, on the recommendation of the president of the audiencia of Manila, such appointments being given only to persons who were lawyers or had some academic or professional title, or to those "whose position and circumstances" warranted it. When such persons could not be found, the petty governors of the municipalities were to act as justices of the peace. In case of a vacancy in the office of judge of first instance, or his absence or sickness, the nearest justice of the peace who was a lawyer was required to perform his duties, the office of the justice of the peace being filled by a temporary appointment made by the governor-general. Petty governors were obliged to discharge their functions in the presence of attesting witnesses of legal age in the full enjoyment of their civil rights, and knowing how to read and write.

By the royal decree of February 3, 1888, the law of civil procedure of Spain was extended to the Philippines, which gave justices' courts jurisdiction over civil cases when the property or interests involved did not exceed 200 pesos or 1,000 pesetas in value. In deciding offenses of a criminal character, the penalties imposed conformed to the requirements of the penal code of the Philippines which was put in operation by the royal decree of December 17, 1886.

The royal decree of January 5, 1891, which became operative in the Philippines twenty days after its publication in the Official Gazette, was a legislative compilation of the organic provisions concerning the administration of justice in all the colonial provinces and possessions. It modified to some extent the decrees already quoted and repealed all legal provisions conflicting with it, and was in force until repealed by the American insular government. This decree is of such recent date and is so accessible in the War Department of the United States to those who may be interested in it that a review of its provisions in detail, in view of what has already been stated, is not necessary. It practically extended to the Philippines the judicial system of Spain in all its branches, and was considered and no doubt was a very liberal concession.

One branch of the Spanish judicial system as applied to the Philippines yet remains to be noticed, and that is the department of public prosecution, which corresponds in its objects to our Attorney-General's Department. The head of the department in the Philippines was the fiscal of the audiencia of Manila, and his subordinates and assistants in the audiencia and lower courts were called *tenientes fiscales* (assistant prosecuting attorneys), *abogados fiscales* (deputy prosecuting attorneys), and *promotores fiscales* (assistant deputy prosecuting attorneys).

By the decree of 1891 they were all required to be Spaniards, not less than 25 years of age, and, except those of the municipal courts, graduates of a university supported by the state. They were appointed by the fiscal of the territorial audiencia, with or without the recommendation of the criminal audiencias, or such recommendation as might be requested from judicial or administrative authorities.

It was the duty of the department of public prosecution to see to the execution of all the laws, decrees, etc., referring to the administration of justice, to supervise the duties of the subordinate fiscales, to represent and defend minors or other incapacitated persons or absentees whose rights were in question, to preserve intact the powers and competency of the ordinary courts, to represent the government and the institutions in the enforcement of the laws, and in all civil and criminal actions to which the state was a party, etc.

SPECIAL COURTS.

In addition to the courts of ordinary jurisdiction already described, there were special courts in the Philippines, which had their prototypes in the mother country, and whose existence was largely due to the centralized and theocratic character of the government administration, and to the privileges of certain classes. Foremost among these were the ecclesiastical courts, which had jurisdiction over all civil crimes and offenses committed by the clergy or other persons having a sacerdotal character, over marriage and divorce, and violations of the canon law. But by the royal order of December 20, 1835, an exception was made in the case of atrocious crimes committed by the clergy, over which the civil courts were given jurisdiction. For many years the jurisdiction of the ecclesiastical courts was exercised exclusively by judges of first instance, who were designated ecclesiastical judges, and regarded as court vicars of the Archbishop of Manila, and the suffragan bishops of the other dioceses.

In 1898 the ecclesiastical court in Manila consisted of one provisor and vicar-general, or ecclesiastical judge, one ecclesiastical prosecuting attorney, one notary, and for the supreme government, one secretary, one vice-secretary, one archivist, one accountant; the suffragan bishops of Nueva Cáceres, Cebú, and Jaro had similar courts. A large proportion, if not all, of these officials were members of the religious orders.

Army and navy courts.—These courts were similar in their jurisdiction to the ecclesiastical courts, and took cognizance not only of purely military offenses, but of civil and criminal cases affecting soldiers and other persons having military privileges. Civil suits could be appealed to the audiencia of Manila, and for that reason the judge-advocates of the army and navy were at one time members of the civil chamber, as already mentioned.

The treasury court.—The royal decree of December 4, 1786, provided in Spain for the appointment of an intendente corregidor with jurisdiction over all legal cases affecting the royal treasury, including contraband, smuggling, etc. By the royal decree of September 16, 1813, this jurisdiction was withdrawn from the intendente corregidor and transferred to civil judges who were lawyers, and who took cognizance in first instance, with appeal to the audiencia. This decree was confirmed by the royal cédula of January 30, 1855, but was not carried into effect in the Philippines until 1856, when the royal decree of December 16 of that year established the treasury court. The court held its sessions in Manila and was composed of a civil judge of the final category, with jurisdiction in first instance over all treasury cases, with appeal to the audiencia.

The commercial court.—This court succeeded the *tribunal de consulado* (tribunal of the consulate), and was established in Manila by the royal decree of July 26, 1832, which extended the code of commerce to the Philippines. It consisted of one prior, two consuls, and two substitute consuls, the subordinate personnel to be in accordance with the provisions of the royal decree of February 7, 1831. The governor-general appointed the members of the court, which had jurisdiction over all transactions, contracts, and other agreements, or matters growing out of the commerce of the islands.

By the royal decree of February 1, 1869, unifying the jurisdiction of the different courts, it was declared that courts of ordinary jurisdiction were competent alone to take cognizance of civil and criminal cases, and of crimes and offenses committed by ecclesiastics, of civil and criminal cases affecting army and navy officers, the treasury, and commerce, including cases of fraud, smuggling, etc.

As a result the treasury and commercial courts were abolished, the civil and criminal jurisdiction of ecclesiastical and military courts was transferred to the ordinary courts, and the personal privileges of the clergy and of the army and navy were taken away.

As a matter of fact, while the decree of February 1, 1869, was published in Manila, June 1, 1869, and its execution ordered, it was never applied to the clergy, the decree, so far as it referred to them, having been suspended by the governor-general until a final decision could be received from the home government. This decision was not rendered, but when the civil code went into effect in December, 1889, the governor-general was authorized to suspend certain titles, which practically exempted the clergy from the jurisdiction of the ordinary courts, except in the case of atrocious crimes, for the commission of which they had been amenable to the civil courts since the promulgation of the royal order of October 20, 1835.

The contentious court.—The council of administration, to which reference has been made, was created by the royal decree of June 4, 1861.

It was composed of the governor and captain-general, as president; the archbishop; the senior officers of the army and navy, respectively; the four suffragan bishops; the regent of the audiencia of Manila; the intendant of the treasury; the prosecuting attorney; the president of the chamber of commerce; and the director of administration—who were all members ex officio—and a variable number of other counselors amounting to ten or twelve, three of whom came from the province of Luzón and three from the Visayas, the latter being chosen by the provincial boards. The council was in one sense representative, and it was its duty to examine the general budget of receipts and expenditures in all branches of the government, insular and local; to prepare such regulations or instructions as the governor-general might wish to propose to the home government; to consider matters pertaining to the royal patronage, and all other subjects which might be referred to it by the governor-general, and in respect to which he desired the advice of the council. For the better transaction of business the council was divided into sections or subcommittees appropriately organized.

Resulting from the decree referred to and forming part of the council of administration was the contentious court, consisting of the president and two judges, taken in turn from the audiencia, and two administrative magistrates or judges, appointed by royal order. By the royal decree of June 3, 1866, the court was reduced to the president and three magistrates. Complaints against the administration of the government were made to the court, with final appeal to the council of state in Spain. By the royal decree of February 7, 1869, the jurisdiction thus exercised in the council of administration was vested in the audiencia of Manila, with appeal to the Supreme Court in Spain; but by the royal decree of March 19, 1875, the contentious court was reestablished as before, but was again abolished or suspended by the royal decree of November 23, 1888, creating the *tribunal contencioso administrativo.* This was a new organization and independent of the council of administration, and was composed of the president and two judges of the audiencia and two administrative judges. This continued until January 1, 1890, when the tribunal was transferred to the council of administration, where it was known as the *secretaría del tribunal contencioso y consejo de administración.*

In addition to the before mentioned courts there was established in the Philippines a general probate court for the adjudication of probate cases. By the royal decree of June 22, 1883, this court was abolished, and the matters of which it had jurisdiction were transferred to the judges of first instance.

Such were the judicial tribunals of the Philippines, by means of which the forms of justice were observed. As a rule, down to the

end of the Spanish sovereignty, the judges of the courts were Spaniards, and the entire judicial system, including the codes of civil and criminal procedure, followed closely, if not actually, the forms observed in Spain. These were characterized by many proceedings and provisions calculated to prolong litigation indefinitely, to add greatly to the expense of lawsuits, to keep prisoners in confinement for long periods, and to prevent the impartial and speedy administration of justice.

Among other causes which were calculated to augment the troubles and expenses of all litigants was the total ignorance of the alcaldes mayores, and many of the judges of first instance, of the law and the proper modes of procedure, as these officials were appointed, as a rule, for political reasons or for almost any reason except proficiency, until after the separation of executive and judicial functions, as already set forth. Again, the judges of first instance and fiscales had very small salaries, and municipal judges and the clerks and secretaries of the courts had none at all, depending for remuneration on official fees and such additional compensation as the litigants were able and willing to pay. The result of this was a great deal of corruption and extortion, and, taken in connection with the many legal obstructions always at hand, and always resorted to by the dishonest and unscrupulous, made an appeal for redress to the courts so expensive as to be entirely beyond the reach of the average Filipino. In short, it would appear that while the laws were humane and wise on the whole, and were adapted to the state of society in the Philippines, the codes of procedure and the personnel of the courts could easily be converted into obstacles great enough and permanent enough to make the people believe that the laws as administered by the courts were not for their protection, and it is not improbable that this feeling added some strength to the general opposition toward Spain which finally appeared; for what government can long hold the respect and affection of the governed which permits the existence of a judicial system under which the poor and defenseless are practically denied the full protection of the laws.

At the date of the American occupation of Manila, August 13, 1898, the audiencias of Cebú and Vigan had practically ceased their functions, the judges having retired to places of greater safety under the protection of Spanish troops. On the following day, August 14, the military governor, Maj. Gen. Wesley Merritt, published a proclamation in which he said:

* * * the government established among you by the United States is a government of military occupation, and for the present it is ordered that the municipal laws such as affect private rights of persons and property, regulate local institutions, and provide for the punishment of crime, shall be considered as continuing in force so far as

compatible with the purposes of military government, and that they be administered through ordinary tribunals substantially as before occupation, but by officials appointed by the government of occupation.

A provost-marshal-general will be appointed for the city of Manila and its outlying districts. The territory will be divided into subdistricts and there will be assigned to each a deputy provost-marshal.

The duties of the provost-marshal-general and his deputies will be set forth in detail in future orders. In a general way they are charged with the duty of making arrests of military as well as civil offenders, sending such of the former class as are triable by court-martial to their proper commands, with statements of their offenses and names of witnesses, and detaining in custody all other offenders, for trial by military commission provost courts, or native criminal courts, in accordance with the law and the instructions hereafter to be issued; * * *

By virtue of this proclamation the criminal jurisdiction of the territorial audiencia of Manila and of the local minor courts was suspended; and on August 22 the local courts were forbidden jurisdiction of any kind over crimes and offenses committed by or against any person connected with the army; such offenses were made triable by military commissions whose punishments were "to conform to the laws of war of the United States, or of either of the states, or the customs of war." The jurisdiction of provost courts extended to all crimes and offenses not exclusively triable by court-martial or military commissions, including violations of orders and of the laws of war, and they had power to award a punishment not to exceed one year's confinement and a fine not to exceed $1,000. The provost court of the province of Manila could sentence for two years and give a fine of $5,000.

Capital crimes and offenses were made punishable by military commissions or courts-martial. Sentence of death or of imprisonment exceeding ten years required the approval of the commanding general of the division. Army officers were judges of the provost courts which were organized in all the provinces under military occupation pending the revival of the local civil courts.

On October 7, 1898, by General Orders, No. 8, the civil courts throughout the islands, which were held and constituted under the laws of Spain prior to August 13, were permitted to resume their civil jurisdiction subject to the supervision of the military government.

On January 30, 1899, the civil jurisdiction of the audiencia of Manila was suspended, but on May 29, 1899, both the civil and criminal jurisdiction of this tribunal were restored, and it was reconstituted under the name of the Supreme Court of the Philippine Islands, with the following organization: One president, a civil branch with one president and two associate justices, a criminal branch with one president and four associate justices, one attorney, and one assistant attorney. Of the associate justices, four were Filipinos and three were

officers of the Army. The president was Señor Arellano, the present chief justice of the Philippines.

On June 5, 1899, the courts of first instance and justices' courts of the province of Manila were reestablished with the civil and criminal jurisdiction they had prior to August 13, 1898, to be exercised by them as far as compatible with the supremacy of the United States.

The island of Negros having acknowledged the sovereignty of the United States, provision was made in General Orders, No. 30, of July 22, 1899, for a judiciary consisting of a superior court of three judges, in whom the judicial power was vested, and such inferior courts as might be established. Appeal was authorized to the supreme court at Manila, in certain cases.

As the various provinces became pacified, the local courts were all reestablished. Certain amendments were made in the criminal code of procedure by the military governor, and authority was given to all courts superior to a justice's court to issue the writ of habeas corpus (April 23, 1900). From this time to July 4, 1901, when the civil government replaced the military government, the civil and military courts were continued side by side under military supervision, each within its proper limits, the justices and judges of all the civil courts except the supreme court being Filipinos.[1]

On June 11, 1901, the Philippine Commission passed act 136, which went into effect June 16, reorganizing the courts and establishing the present judiciary. Under its provisions "the judicial power of the government of the Philippine Islands was vested in a supreme court of one chief justice and six associate justices; a court of first instance in every province in which civil government shall be established; and a court of justice of the peace in every municipality of a province in which there is a court of first instance." The organization and jurisdiction of these courts will be found in the act referred to.

This act also provided for an attorney-general, an assistant attorney-general, and a solicitor-general; repealed the jurisdiction of provost courts over civil actions, and transferred such actions as were pending in the provost courts to the proper civil tribunal in which they would have been brought under the provisions of the act had it been in force when such actions were commenced. This terminated the jurisdiction of all military tribunals over civil cases, except in those parts of the Philippines which remained under military control.

By act 140, of June 12, 1901, the Philippine Islands were divided into fifteen judicial districts for courts of first instance, the city of Manila constituting one district, and on June 27 were initiated the

[1] Owing to the animosities between the Filipinos and Spaniards, it was found to be practically impossible for a Spaniard to preside as a judge without exciting intense ill feeling.—*Director.*

many important and salutary changes which have been made by the insular government, and which, commencing with the substitution of stenographers and typewriters for longhand writers in the courts, and embracing all other details of the entire Spanish colonial judiciary as it existed in the Philippines at the time of American occupation, have transformed it into a system under which we have a more simple code of civil and criminal procedure, following American methods, and an avoidance of the great delays which previously existed in the disposal of cases and criminals. In fact, delay is now more a question of a sufficient number of judges than, as formerly, of voluminous and abstruse forms, and of petty interlocutory appeals or other means of obstructing and arresting the course of justice.

It is manifestly impracticable in a sketch of this brief character to relate in detail all that has been done for the Filipinos in this way, more especially as the student and investigator may find it in the published acts and reports of the Philippine Commission. It is sufficient to say that the successive steps taken in changing the judicial system are of great interest, and illustrate in a conspicuous manner the adaptability of American legal institutions to the greatest of our new possessions.

Until January 1, 1906, Spanish will be the official language of all the courts, and after that English; meanwhile the supreme court and courts of first instance may in any case order a duplicate record of a case in the English language whenever, in the opinion of the court, the public convenience and the interest of the litigant parties will be promoted thereby. This is a fortunate settlement of a difficult question, and is equally fair to the English and Spanish speaking lawyers, besides preventing the resentment which would have followed had English been forcibly imposed on the people by operation of law.

POPULATION.

I. HISTORY OF THE POPULATION.

Christian or Civilized Tribes—Non-Christian or Wild Tribes—Chinese and other Foreign Elements in Filipino Races.

BY DR. DAVID P. BARROWS,
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The Christianized Filipino tribes to-day constitute a total of nearly seven million souls. Their ancestors probably did not number more than half a million at the time of the Spanish settlement of the Philippines. Exclusive of the present pagan and Mohammedan tribes, the people of the Philippine Islands have multiplied about fourteen times in the three hundred and eighty-two years which have elapsed since Magellan's arrival in Cebú. The earliest complete enumeration of the islands appears to have been the *Relación de Encomiendas*, which was made in the year 1591, twenty-six years after the arrival of Legaspi. At that time the Spanish conquest of the islands had been completed and the archipelago was almost as completely in the military possession of the Spanish as it was during the two centuries which followed. A great part of the Christianizing of the population had yet to be achieved, but from the valley of the Río Grande de Cagayán to the northern coast of Mindanao the natives had been made to feel the hand of the Spanish conqueror and were submissive to Spanish authority. The Relación de Encomiendas gives the total number of souls in 1591 in all the provinces and islands reduced to subjection as 667,612. We shall have occasion presently to examine this enumeration in greater detail, but for the present we may occupy ourselves with a few confirmations of the general sparseness of population at the time of the discovery.

Ethnologically, no less than geographically, the Philippines belong to the Malay archipelago. With the exception of the aboriginal dwarf blacks, the Negritos, who are still found inhabiting the forests in a great number of localities, all the tribes of the islands, whether Christian, Mohammedan, or pagan, are, in my belief, derived from

the Malayan race. We probably have in these tribes two types which represent an earlier and a later wave of immigration, but all came from the south, all speak languages belonging to one common stock, and all are closely related in physical type and qualities of mind. As representative of the first migratory movement may be named the Igorot, the mountain head-hunters of northern Luzón, and of the latter almost any of the present Christian or Mohammedan tribes. The migratory period of this latter type, which constitutes the great bulk of the present population of the islands, is almost covered by the early historical accounts of the exploration and settlement of the Far East.

Four hundred years ago, when the Portuguese discoverers and conquerors reached southeastern Asia, they found the long peninsula in which the continent ends, and the islands stretching south and east in this greatest and most famous of archipelagoes, inhabited by a race which called itself *Malayu*. On the island of Java this race had some ten centuries before been conquered by Brahmin Hindus from India, whose great monuments and temples still exist in the ruins of Boro Budor. Through the influence and power of the Hindus the Malay culture made a considerable advance, and a Sanskrit element, amounting in some cases to 20 per cent of the words, entered the Malayan languages. How far the Hindu actually extended his conquests and settlements is a most interesting study, but can hardly yet be settled. He may have colonized the shores of Manila bay and the coast of Luzón, where the names of numerous ancient places show a Sanskrit origin. The Sanskrit element is most pronounced in the Tagálog and Moro tongues. (Pardo de Tavera, *El Sanscrito en la Lengua Tagala.*)

Following the Hindus into the Malay archipelago came the Arabs. They came first as voyagers and merchants, and here as always the Arab was a proselyter, and his faith spread rapidly. Long before the Portuguese arrival Islamism had succeeded Brahminism and the Arab had supplanted the Hindu. Two hundred and fifty years before the arrival of the Portuguese, Marco Polo, on his return from China, had passed through the Malay archipelago, and spent six months on the eastern coast of Sumatra. Even then, in the year 1260, he tells us that the seacoast population were "Saracens." Mohammedanism gradually made its way until, on the arrival of the Europeans, its frontiers were almost the same as those of the Malay race itself.

The people who carried this faith, and who still rank as the type of the race, were the seafaring population, living in boats as well as on the shore, who control the islands of the straits between Sumatra, the Malay peninsula, and Borneo. These people received from the Portuguese the name of *Cellates*, a corruption of *Orang Salat* (Sea Folk).

Under the influence of Mohammedanism this race, which seems to have originated in Sumatra, improved in culture, formed many settlements and principalities, and because of their seagoing habits, their

enjoyment of trade, and their lust for piracy, carried their name, (Malayu), their language, and their adopted Mohammedan religion throughout the Malay archipelago.

Probably as early as 1300 these adventurers established a colony on northwest Borneo, opposite the island of Labuan, which colony received the name of Brunei, from which has been derived the name of the whole island, Borneo.[1] The island was already inhabited by Malayan tribes of more primitive culture, of which the Dyak is the best known. From this settlement of Borneo the Mohammedanized Malay extended his influence and his settlements to the Sulu archipelago, to Mindanao, to Mindoro, and to Manila bay. This Mohammedan conquest was making formidable beginnings when the Spanish soldier and missionary, as fiercely fanatical as the Malay himself, and with all the hatred for Islam engendered by combating that religion for eight hundred years in Africa and Spain, arrived in the Philippines by way of America and encountered Mohammedanism again upon its easternmost frontier. Here historical records for the Philippine peoples begin.

Magellan, after his terrible and unparalleled voyage around South America and across the Pacific, reached the eastern coast of Sámar in March, 1521. Pigafetta, the chronicler of the voyage, says:

> Saturday, the 15th of March, we sighted an island which has very lofty mountains; soon afterwards we learned that its name is Zamal, distant 300 leagues from the islands of the Ladrones. (*Primer Viaje alrededor del Mundo*, Spanish translation by Amoretti, Madrid, 1899, page 27.)

On the following day, the sea-worn expedition landed on a little uninhabited island south of Sámar, which Pigafetta calls "Humunu," and which is still known as Homonhón and Malhón, or Jomonjol. Here they received the first sight of the people of the Philippines, being visited by nine men in a canoe. They saw other boats fishing near and learned that all of these people came from a small island called Sulúan, which lies east of Homonhón about 20 kilometers.

Now, who were these fishing folk with their little settlements on the shore of Sulúan? They were perhaps not typical of the rest of the population which Magellan found sparsely scattered about the coasts of several of the central islands, but they were almost certainly of the same stock from which the present great Visayan[2] people are in the main descended. Many things incline me to believe that these natives had come, in successively extending settlements, up the west coast of Mindanao from the Sulu archipelago. "Sulúan" itself means "Where there are Suluges," i. e., men of Sulu or Joló.

[1] The name *Borne*, *Pone*, etc., may, however, have antedated this settlement.

[2] Throughout this sketch the writer has spelled *Visaya* "Bisaya," which he states is correct; *Ilocano* "Ilokano," and *Bicol* "Bikol." Without questioning the correctness of this opinion the spelling has been changed to conform to the usage of the Philippine Commission.—*Director*.

The Sulu archipelago is to-day inhabited by two peoples—the Sulu and the Sámal. The Sulu are a Malayan people, whose home has long been the island of Joló, and who in that location seem to have been proselyted to Mohammedanism. The Sámal or Sámal Laut (Sea Sámal) are the Orang Salat of the Malay straits. Now, it is notable that almost the first two islands spoken of by Pigafetta bear the names of these two peoples of the southern archipelago, Zamal (Sámar), and Sulúan. To the present day the physical type and the language, persisting unchanged in spite of changes of culture, closely relate the Visayan to the Moro.

In addition to these arrivals from the archipelago of Sulu there was probably a more primitive Malayan population, whom the later arrivals already had more or less in subjection as the Moros even now control the pagans on the mainland of Mindanao. These people are described as being painted and tattooed, and as wearing large ornaments in the stretched lobes of their ears. Pigafetta also suggests that the dog was a part of their food and speaks of seeing houses in the trees. These customs are those of the primitive Malayan, and still exist in the Philippines, although at present among neither Visayan nor Moro. Thus we may infer that at the time of the discovery there were on these central islands of the archipelago a primitive, tattooed Malayan people, related on the one hand to the still primitive and pagan tribes of the Philippines and on the other hand to the wild head-hunting tribes of Borneo, and in addition intruding and dominating later arrivals, who were the seafaring Malays.

We have now to notice that the population of the Visayan Islands was very sparse. Pigafetta says that they stayed on the island of Homonhón eight days. In spite of the enticing articles offered them in exchange, the natives brought few provisions. A few coconuts and oranges, palm wine, which they called by the Hindu name *arak*, and a chicken or two, were all that was obtained. On the twenty-fifth the fleet again set sail and passed four small islands without inhabitants, and it was not until the night of the twenty-eighth that they saw a fire, and, directing their course toward it, reached the little island of Limasagua. Here was a village and here they met two chieftains—"kings," Pigafetta calls them, and gives their names as Rajá Calambú and Rajá Siagú. Evidently the Mohammedan terms *dato* and *sultan* had not yet replaced the Hindu title *rajá*. These two chieftains had their residence, not on Limasagua, but on the island of Mindanao, one at Butúan and the other at Calagan (the latter place probably Cagayán de Misamis).

Magellan was getting in desperate need of provisions and the resources being wholly inadequate to supply his ships, he inquired where there were islands at which he could exchange his merchandise for provisions, and they told him there were three—Cielon (perhaps

Leyte), Calagan (Mindanao), and Zubu (Cebú), and that the last was the best, and to reach that island they would provide him with guides. (*Primer Viaje*, page 36.) Leaving Limasagua, they sailed for Cebú, steering northwest and passing five islands—Cielon, Bohol, Canigao, Bayaban, and Gatigan—without mention of sighting people or towns or securing any food, except one of the common, huge fruit bats, which they ate with such relish that they agreed its flesh was like chicken.

They reached the harbor of Cebú on Sunday, April 7. We do not need to discuss here the events of Magellan's stay nor his death on the little island of Mactán. It is sufficient to note that in that vicinity there was then a population of possibly from 4,000 to 5,000 souls. Pigafetta gives the names of five native settlements on Cebú Island, all of which offered obedience to the Spaniards. (*Primer Viaje*, page 57.) The native force that went with Magellan to attack Mactán filled from 20 to 30 *balangais*. Judging from the capacity of Moro war vessels of recent times, this could not have been a force of over 800 men. The natives who defeated them in Mactán and slew the great discoverer were, according to Pigafetta, 1,500 strong, but we must allow for the exaggeration of a defeated party. Further, the very famous letter on Magellan's voyage, entitled "*De Meluccis Insulis*," states that over 2,200 Indians were baptized by the Spaniards at Cebú.

Unquestionably Cebú of the early date was a settlement of some distinction with vessels from far distant ports resorting there for the trade of gold and slaves. Magellan found there a Mohammedan merchant, and was informed that a junk from Siam had departed just before his arrival. The people were pagans, worshipping idols and adoring a deity whom they called "Abba."

After the departure of Magellan's expedition from Cebú, the Spaniards passed an island which they call Panialongan, evidently the little island of Panglao, "whose inhabitants," says Pigafetta, "are negroes, like those of Ethiopia." This is the only mention he makes of the Negritos, who at that time constituted almost the only population of the neighboring island of Negros.

The next landing place seems to have been on the northwestern coast of Mindanao at the site of Quipit. Here there was a settlement. Pigafetta himself went on shore and visited the "king." The village, like most Moro settlements of Mindanao, lay several miles inland back of the mangrove swamps which line these shores. The population was probably not numerous here. It seems to have been one of those tiny principalities still so common in the Moro country. It is at this point, however, that Pigafetta speaks of the most famous island of the Philippines—Luzón. "To the northeast, two days away," he says, "is the island of Lozón, which is very great, to which go every year for the sake of traffic six or eight junks from the country of the Lechios."

By the latter he undoubtedly means one of the coast provinces of China. He noted here also porcelain vessels and ornamented earthenware pots, unquestionably of ancient Chinese importation, which are still treasured by the Subanon of this peninsula and sell for considerable sums of money. Sailing from Quipit and turning westward, the fleet reached an isolated island in the midst of the Sulu sea—Cagayán Sulu. It was almost uninhabited, and its few denizens were Mohammedans expelled from Borneo. The Spaniards could get no provisions here, and in the last extremity of need they continued westward and reached the island of Paragua. Pigafetta says:

> It is a great island, and we had the fortune to find a good provision of food, of which we had great necessity. So reduced were we by lack that more than once we had been on the point of abandoning our vessels and establishing ourselves on any land where we might live. This island was for us the Promised Land.

The inhabitants, from Pigafetta's account, seem to have been Mohammedans, or at least seafaring Malays settled on these shores. It is impossible to state what their numbers were or in what harbor the Spanish fleet lay. These coasts have at the present time only scattered hamlets of Sulu Moros. From here they sailed southward to Borneo, or Brunei, whose earlier foundation has already been noted. The barbaric court of the Sultan of this Malay colony is described by Pigafetta. Here they saw elephants, horses, and carabaos. The Mohammedan town contained, according to the narrator, 25,000 families, with their houses built out over the water according to the custom of the seafaring Malays. Driven by interruption of friendly intercourse from Borneo, the Spaniards returned over their route to Balábac, and thence eastward again, passing close to the islands of Joló and Basilan, whose pearl fisheries excited their liveliest interest. They also coasted along the southern coast of Mindanao, and one of the places they mentioned, *Subanim*, suggests a settlement of the present aborigines of that part of Mindanao, who are known as Subanon. Here, too, they saw the notorious "sea gypsies," the Bajau or Sámal Laut, whose wandering boats, then as now, shifted their stations with the changing of the monsoon. They also heard of the Maguindanao Moros and of their important settlement between the coast and Lake Liguasan. Farther south they landed on Sarangani, where they found gold and pearls and pagan inhabitants. From here they secured pilots for the voyage southward to the Moluccas.

The conclusions as to the population which we can draw from these narratives of this first discovery are that at the beginning of the sixteenth century Mohammedanism had established itself in Borneo, the Sulu archipelago, Mindanao, Cagayán Sulu, Paragua, and Luzón. The trading vessels of the Mohammedanized Malays visited with some frequency all quarters of the Philippine archipelago. Junks from

China likewise came for trade, as they did three hundred years before, to Luzón, the Visayan Islands, and the northern coast of Mindanao. The population was, however, very sparse, and, as still occurs in many parts of the Sulu archipelago, preferred to settle on the islets and coral keys which afford good fishing ground and are doubtless freer from malarial perils than are the great forested islands of the archipelago. In spite of the numerous islands seen and visited by this expedition I doubt if the population of all the settlements encountered by the Spaniards in the Philippines amounted to as many as 10,000 souls.

The voyages which immediately succeeded the expedition of Magellan—that of Loaisa in 1526, Saavedra in 1528, and Villalobos in 1541–1543—supply us with little additional information, inasmuch as these expeditions scarcely succeeded in entering the Visayan Islands, but passed southward along the coast of Mindanao to the Moluccas. It is only when we come to the successful expedition of Legaspi that we again find striking data concerning the people whom the Spaniards found here.

The experience of Legaspi's fleet (1569–1571) in searching for populous coasts and acquiring supplies of food was almost a repetition of those of the voyagers who had preceded him in the years earlier in the century. The little seas which divide the islands of the southern Visayas were then rarely disturbed by the passing of native praos. Most of the islands contained neither inhabitants nor clearings. The green tropical forests extended unbroken from the hilltops to the shore. The little island of Limasagua, which had been quite populous in the time of Magellan, was almost deserted. "It contains," wrote Legaspi, "less than twenty people." (*The Philippine Islands*, Vol. II, page 205.) Settlements, with a few exceptions, were small. Some, which were dignified with the name of towns, contained no more than twenty or thirty people (op. cit., page 203). Then, as in Magellan's time, Cebú was the most populous of these southern islands. An exploring expedition which left Legaspi's fleet and sailed completely around the island reported that it found fourteen or fifteen villages on the seacoast, and that by comparison "it was thickly populated" (op. cit., page 27; also page 214). Under the necessity of reaching a population with sufficient resources to supply his famished expedition, Legaspi sailed to Cebú, and anchored off the site of the present city, April 27, 1565. The natives were hostile, and hurried to resist the invaders. "Help of men," wrote Legaspi in his letter to the King, "had come in praos from the outside, so that their number must have been almost two thousand warriors" (op. cit., page 213). From this estimate of armed men, we can perhaps infer that the population in the environs of Cebú numbered nine or ten thousand souls. Here, after effecting a settlement, Legaspi, having sent back to New Spain more than half of his

expedition, held on from the first of June, 1565, until August of 1568, when reenforcements arrived from Acapulco. During this period of more than three years he had probably less than one hundred and fifty men, not a large force to sustain had there been any considerable population in the Visayan Islands, yet the record of these three years is one of almost constant experience of scarcity of food and of expeditions sent out to the neighboring islands, Leyte, Bohol, Mindanao, and Panay, to forage for provisions. In 1569, the power of his reenforcements, as well as the necessity of securing greater supplies, led Legaspi to the conquest of Panay. Here the Spaniards found larger population and more abundant food. The sheltered coast of Iloílo, facing the island of Guimarás, then, as now, appears to have been relatively populous. From Iloílo as a base, the conquest of the islands was carried forward to Mindoro and Luzón.

We are fortunate in possessing for this most interesting episode of the conquest an account of one who participated in the expedition, apparently a soldier, who, in 1572, in the city of Manila, wrote what he entitles "*Relación del Descubrimiento y Conquista de la Isla de Luzón y Mindoro*" (printed for the first time in *Archivo del Bibliófilo Filipino*, Vol. IV, Retana). In this account appear most interesting estimates of the population of the most important islands of the archipelago by one who was an eyewitness of their conquest. The writer more than once states that most exaggerated reports of the population had become current in New Spain.

The expedition for the discovery of Luzón set out from Panay and passed up the west coast of Mindoro and attacked the stronghold of Mambúrao, which was at that time, as it was centuries later, a resort of Mohammedan pirates. Not only this island, but that of Lubang, lying between Mindoro and the entrance to Manila bay, as well, was settled by Malays from Borneo. At the time of the Legaspi arrival they were coming in increasing numbers to the Philippines. Excepting these Malays the population of Mindoro was certainly not large. Says the chronicler:

> The field marshal arrived at the island of Mindoro at a town and port which had the reputation of being very large and very strong, but the contrary was discovered, because the town is small and contains only three or four thousand inhabitants (page 10).

Manila, itself, according to this writer, had been reported to have 80,000 Moros in its environs, but, as a matter of fact, leaving out the women and children, no more than 2,000 of these Mohammedan foes could be rallied to oppose the Spaniards. Caintá, which was taken by the company of Salcedo, is reported to have had only 1,000 inhabitants, "400 of whom were killed by the Spaniards in the assault" (page 22).

The fall of Caintá brought Salcedo to the entrance of Laguna de Bay. He states:

> When the fort of Cayntá had been destroyed in the way which I have related, this fort or town was found to be very close indeed to a great lake of sweet water, which is about four leagues from the city of Manila, and which had been reported to be very great and very populous, though for the latter there can not be the tenth part of what had been reported. The towns which are all around this lake were pacified by Capt. Juan de Sauzedo, and they may have twenty-four to twenty-six thousand people (hombres). (*Relación*, page 24.)

(The word "hombres" here almost certainly means "souls," and that the total population in Salcedo's time on the shores of the bay could not have been more than the number indicated above is shown by later enumerations made for the tribute.) Twenty years later the Relación de Encomiendas gives the population of the province of La Laguna, which included Mórong and villages to the west of Laguna de Bay, as only 48,000 souls.

Subsequent remarks in this same Relación are no less interesting. The island of Mindanao is stated to be "very large and very poorly populated, at least in the part in which I have been, which is from the river of Butúan to Cape Calimita, which is eighty leagues of coast" (page 32). "The next island is that of Negros, which is all pacified. It contains 20,000 people, and is reparted (i. e., divided in *repartimientos*, or encomiendas) among the Spaniards who remained in Cebú. In it there are said to be mines of gold. It is near that same island of Cebú. It is very poorly populated. Between these three islands are many other little islets, some of them populated and some without population, and in all of them there are mines" (page 34).

The island of Panay is reported as well populated and fertile, abounding in rice, pigs and chickens, wax and honey. "The gold which is taken from it is very fine, but while the governor was on this island, because of our sins or for those of the natives, or for some cause that God knows, there came upon it the greatest conceivable number of locusts, which have lasted three years and still persist. They have not left a rice field undestroyed. There has come great hunger upon the natives of this island and a pestilence which has killed more than half of them, and so they continue to die, until God, our Lord, may be pleased to remove his wrath from against them."

Reports at the date of this Relación had also reached the Spaniards of two other thickly populated regions as yet unvisited. These were the valley of the Bícol river, in Ambos Camarines, and the coast of Ilocos.

Thus the regions notable for their population at the time of the Spaniards' arrival were Cebú, the coast of Iloílo, Manila, and around Laguna de Bay, the valleys of the Grande de la Pampanga and the Bícol

rivers, and the coast of Ilocos. But even in these regions the population amounted to only a few thousand. The great towns of twenty and thirty thousand people had their counterparts then only in little rancherías of twenty or fifty families. This scarcity of population is the principal explanation of the rapid and easy conquest of the Spaniard. There were no formidable centers of population, nor were the Filipinos united anywhere in political units of any size. The community of a few thousand souls under its independent dato or rajah was the most formidable unit with which the conquerors had to contend. Almost the only resistance took place in the vicinity of Manila, where Mohammedan Malays from Borneo had established themselves, and where a strong datoship was beginning to appear, but even here there were no such wealthy and powerful princes as were to be met with farther south in the Malay archipelago, where Mohammedanism had arrived earlier and accomplished more important results. There was nothing here even to begin to equal the sultanates of Borneo and Sulu or those barbaric rajahs of Ternate and Tidor, whose magnificence and wealth of spices dazzled the eyes of the great Drake, who repeatedly and with such success defeated the armed expeditions of the Portuguese and the Spaniards.

We may now turn back to the notable report upon the repartimientos, or encomiendas, of the Philippines made to the King from Manila on the 31st day of May, 1591. This document was found by Retana in the Archives of the Indies at Seville, and published by him for the first time in 1898 (*Archivo del Bibliófilo Filipino*, Vol. IV). As above stated, the Spanish military conquest of the archipelago was, by 1591, completed. The cities of Manila, Nueva Segovia (Lal-ló), Vigan, Nueva Cáceres, Arévalo (Iloílo), and Cebú had been founded. The islands, wherever they had inhabitants, had been divided into repartimientos, that characteristic institution of Spanish colonization which has been made famous through the researches of Helps and other historians. The repartimiento, as developed in America and transferred thence to the Philippines, was a royal grant by the King to a subject of a certain amount of land with its native population, with the right to collect from these the *tributo* and to enjoy under certain restrictions the benefits of their industry. Originally connected with grants of land and thereby partaking something of feudalism, the necessity for a landed estate was eventually done away with, and in America large bodies of Indians were let out and worked practically as slaves. These grants of natives received the name of encomiendas. In the first reports and requests for succor sent back by Legaspi from Cebú was the petition to the King that the islands and people might be given in encomiendas to the captains and soldiers who had effected the conquest. This policy was allowed by the King and carried out

by the colonizers. Soldiers, as they retired from service, had allotted to them certain communities for their special benefit, and other native villages were reserved for the benefit of the King. As each native family represented so much income to the Spaniard, the settlement of the islands was vigorously pushed wherever there was population, and we may be almost certain that the final division of these encomiendas, made at a time when the islands were thoroughly subdued and submissive to the conqueror, included practically all the available population exclusive of the mountain Igorot and the implacable Mohammedan Malays on the south. To those who escaped this system should also be added the nomadic forest Negrito, who fled where the conqueror could not pursue them, and who, with few exceptions, were not brought under encomiendas.

Thus, I regard the report to the King of a total of 166,903 tributes as a close statement of the number of Filipino families in 1591, whose descendants to-day form the Christianized Filipino peoples. It may, however, have been an exaggeration. The Spaniard reckoned one tribute for every four souls, which gives us the figure for population above quoted, 667,612. A majority of the names of the encomiendas are recognizable to-day as the names of towns and villages of the Philippines. The islands had already been divided into provinces which included Manila, Pampanga, Pangasinán, Ilocos, Cagayán, La Laguna, Camarines, Masbate, Cebú (which included Sámar, Leyte, Bohol, and northern Mindanao), Panay, and Calilaya, the latter a jurisdiction which included Mindoro, Lubang, Batangas, the Calamianes, and Marinduque.

Manila, with the coast of Manila bay and the encomiendas of Cavite and Maragondong, contained, according to this official report, about 30,640 souls; Pampanga, which included Bataán and Bulacán, about 75,000 souls; Pangasinán, where the population was confined to the immediate vicinity of the Gulf of Lingayén, including the Cape of Bolinao, had 24,000 inhabitants. The interior of the central plain of Luzón, embraced to-day by the provinces of Tárlac and Nueva Écija, seems to have had then practically no population at all—at least this region was not divided into encomiendas, nor in the historical accounts is there mention of finding population between the river Pampanga and the Lingayén gulf. It is probable that great forests then covered this interior valley, the vestiges of which are still to be seen. Cagayán valley had a relatively large population—97,000—but this included an encomienda of wild Igorot on the upper waters of the river, the Babuyán Islands, Calayán, and Camiguíng, and, considering estimates at the beginning of the last century, may have been a gross exaggeration of the actual number. Ilocos, the whole narrow coast facing the China sea from the extreme north of Luzón to the Gulf of Lingayén, yielded

17,130 tributes, including "*El Abra de Bigan*," which would give us a population of 68,520 souls, a larger number than is given by the tribute collectors a century and a half later. The environs of La Laguna, including Mórong, had 48,000 people. The Bícol country and the Camarines, including the islands of Capul and Catanduanes, and a possible encomienda on the northernmost point of Sámar, represented 86,640 souls. The islands of Masbate and Burias each yielded 400 tributes.

The jurisdiction of Cebú was very extensive. It included, in addition to the island itself, Masbate, Burias, Leyte, Negros, the settlements of Cagayán and Butúan in northern Mindanao, Caraga on the east coast of Mindanao, both coasts of Sámar, the little islands of Camotes, Mactán, and the other innumerable islets which dot this sea. Altogether the population yielded only 15,833 tributes, which would give us less than 65,000 souls. Bohol seems to have been for a time quite without inhabitants. Negros had no encomienda except in the extreme north, which seems to be due to the fact that its early population was almost entirely Negrito whom the Spaniards were unable to capture and control. The great peninsula of Surigao likewise had no settlements and is practically never mentioned in the historical accounts of this date. Of all this part of the Visayas the island of Leyte was most thickly inhabited and reported no less than ten important encomiendas. The population of Cebú, especially in the vicinity of the city, had apparently declined. The natives evidently preferred to remove from the vicinity of so important a Spanish settlement.

In the jurisdiction of Panay, which included the islands of Guimarás, Tablas, Cabuyan, and Cuyo, there was a relatively large population—70,000 souls. Of this number no less than a thousand tributes were collected on the little island of Cuyo, which was the encomienda of Capt. Juan Pablo.

The jurisdiction of Calilaya, as stated above, was a curious one. It included altogether about 22,000 souls. On the island of Lubáng, which had been an ancient Moro stronghold, there were 2,000 people. On Mindoro, in the vicinity of the Bacó river and Calapán, about 2,800; around the Bay of Batangas 5,600; while in the vicinity of the river and lake of Bombón (Taal) was one of the largest populations of any one locality—16,000 people. Their strength may be seen from the fact that years earlier they had repulsed the fiery young soldier, Salcedo.

In the Calamianes there were collected 2,500 tributes, "with the Negrillos," which gives a population of about 10,000, and this probably includes settlements on the north coast of Paragua.

One district more of the archipelago must be noticed, and that is the east or Pacific coast of Luzón. Here were a few scattered and

very ancient Tagálog settlements whose population from that date to this has remained almost stationary. Maubán had 3,000 people; Casiguran, 2,000; and Baler, about the same.

Other data furnished by this Relación show that even at that date there were 140 missionary friars in the islands, but that 161 of the 267 encomiendas lacked Christian instruction. Of this number of encomiendas, 31 yielded tribute to the King and 236 to private people. There were 12 alcaldes mayores and 15 lieutenant alcaldes for the administration of justice and the government of the country. In those cities which had been founded for the residence of the Spaniards, Manila had about 300 European inhabitants; Nueva Segovia, "many Spanish residents," a number hard to interpret, since Vigan or "Villa Fernandina" had only five or six; Nueva Cáceres, about 30, with a convent of the Franciscans; Cebú, an equal number; and Arévalo, close to the present city of Iloílo, something more than 20. Of Chinese in the islands at that early date there were reported 2,000 in Manila in their quarter, the Parian, and 1,000 more in other parts of the islands.

The system of encomiendas prevailed in the Philippines from the time of Legaspi until the opening of the seventeenth century. Then it fell before the repeated assaults of the missionary friars. The missionaries, at the commencement of the conquest, in great contrast to the benefits they enjoyed later, appear to have received no income from the labor of their converts. Thus, from motives of self-interest, as well as of humanity, they were opposed to the encomiendas, and in their writings of this date we have sufficiently black descriptions of the treatment and condition of the Filipino population under this early system of government.

It is noticeable that the number of natives assigned to a single encomendero in the Philippines was large. By an ordinance of 1512, King Ferdinand of Spain had forbidden any person, no matter what his rank, to hold more than 300 Indians of America on any one island (this decree is given in *Documentos Inéditos*, Vol. I, page 236); but in the Philippines as many as 1,200 *tributantes* were held by a single Spaniard in one encomienda.

The missionaries charged the encomendero with seeking extortionate profits and of neglecting those duties charged upon them by the Laws of the Indies, viz, the spiritual and temporal advancement of the natives granted them in encomienda. The restlessness of the natives under the system was shown in many ways. They frequently abandoned their villages, where the tributes and forced labor were exacted with rigor, for other regions or islands. This fact would explain in many cases the sudden decrease in population of certain shores and provinces after occupation by Spaniards. Whether they simply took to the interior (*remontado*) or removed to other localities out of reach,

the result to the population was the same. Their grievances appear, also, in the frequent risings which occurred in the last years of the sixteenth century. For example, revolts were almost continuous during the year 1583. Governor Santiago de Vera, who arrived the following year, brought orders from the King for the reform of the system and punished certain encomenderos, among them the encomendero of Abuyo, Leyte; but, in spite of reforms, in 1585, the natives of Pampanga and those of Manila confederated with Mohammedan Malay traders from Borneo and planned to fire the city and destroy the Spaniards. Both coasts of the island of Sámar and the island of Leyte were again in disturbance. Here the Indians had been incensed by injustice in collection of tribute, which was paid in wax, the weight being determined with a false steelyard. They drove the encomendero from the island, and he narrowly escaped with his life, fleeing in a banca to the island of Cebú. Three years later, the island of Leyte rose again, and in 1589, Cagayán flamed into rebellion, and in the town of Dingrás, Ilocos, the natives rose against the collectors of tribute and slew six Spaniards of the pueblo of Vigan. (Zúñiga, *Historia de Filipinas*, pages 157 and 165.)

In 1583 the first bishop of the islands, Domingo de Salazar, addressed to the King a bitter complaint against the encomenderos and the civil administration as a whole. (*Relación de las Cosas en Filipinas*, in *Archivo del Bibliófilo Filipino*, Vol. III.) The bishop complains that in the rich fields of Bulacán and Pampanga great gangs of laborers had been impressed to fell the timber for the construction of the fleets used by the governors on their expeditions to the southward and for the seizure of the Moluccas; that Governor Ronquillo had forced many Indians into the mines of Ilocos, where they had died of their toil or returned so enfeebled that they could not plant their rice fields. Hunger and famine had swept over the valley of the Pampanga, and on the single encomienda of Guido de Lavezares over a thousand had died of starvation. Salazar further states that natives were tortured in fault of tribute or sold into slavery. "They even collect tribute from infants and aged and the slaves, and many do not marry because of the tribute, and others slay their children." (*Relación*, pages 13 and 14.)

In spite of these evil reports of the islands under the encomiendas, population seems to have made slow gains and at the beginning of the seventeenth century to have become more settled in its homes, more widely distributed, and of greater importance. The missionary friars, who came in large numbers, by the end of the century had founded many of these centers of population which have since grown into towns. The Augustinians were the pioneer order, and several of these friars had come with Legaspi. They had been followed by those of the order of St. Francis. Then came the first Jesuits, few in number and

at first without resources, in the company of the first bishop, in 1580. After the Jesuits came the Dominicans, and last of all the Recoletos, or barefooted Augustinians. The archipelago was divided among these orders for the establishment of missions and the civilization of the natives.

The Augustinians had many parishes in the Visayan Islands, practically all the Ilocano and some Pangasinán parishes and all those of Pampanga. The Dominicans had a few curacies in Pangasinán and all of the valley of the Río Grande de Cagayán. The Franciscans had convents and churches in the vicinity of Manila, on Laguna de Bay, and thence southward through the Camarines. The Jesuits were at first assigned parishes at Taytay and Los Baños, but in 1592 one was sent to the encomienda of Tigbauan on the island of Panay; afterwards others to Cebú, Leyte, and Sámar.

The earliest historical account of the Philippines, the *Relación de las Islas Filipinas*, was written by one of the Jesuits, Padre Pedro Chirino, and was published in Rome in 1604. From this valuable account we may gain some information of the numbers and condition of the natives at the end of the century. Chirino speaks briefly of the islands in general and states that those named and best populated were "Manila, Mindoro, Luban, Maranduque, Isle de Fuegos, Isla de Negros, Guimarás, Isla de Cabras, Masbate, Capul, Ibavao (Leyte), Bohol, Panay, Cagayán, Cuyo, Calamianes, Paranan," "without mentioning some of less importance, although populated, which altogether would amount to forty or more; besides others uninhabited, some small and others of good size." Tigbauan, which lies fourteen miles west of Iloílo, in Chirino's day had a considerable population of Negrito between whom and the Malayan population on the coast there was sometimes war. Chirino afterwards was transferred to Leyte, at that time the most populous island of the Visayas. He speaks of it as being populated with a great many people ("*Esta poblada de muchísima gente*"). "And so," he says, "the towns are not far from each other, and there is no one of them that does not have a great palm grove and a beautiful and clear running stream." The Jesuits made five settlements here, in Dúlag, Carigara, Palo, Alañgálang, and in Ormoc. Chirino's descriptions are, unfortunately, very indefinite. Thus he speaks of Ibabao, as the west coast of Sámar was called, as "great and well populated, and having on all sides many adjacent islands, also populated and very receptive to evangelization." The first Jesuit to take his station here was Padre Francisco de Otaso at the village of Tinaogan. Soon after commencing his work a pestilence swept over the island. Chirino states that of those who died Otaso baptized a thousand. His descriptions of the population agree with the Relación de Encomiendas, which showed Leyte and the west coast of Sámar to

have been far more populous than any other part of the Visayan Islands, except southern Panay. His description of the island of Bohol, which states it was populated with many people, is harder to believe, since, as we have seen, at the time of Legaspi's arrival the population was very scant, and in 1591 apparently absent. In eight months, Chirino states that the population of Baclayón was converted, with its barrios and also Loboc, which was built on a river "where there are more than 3,000 souls."

There were some native rulers who had large towns under them, like the rajahs of Cebú and Manila, but most of the population was scattered and was ever ready to retreat into the forest. For this reason the first task of Father Cosme de Flores of the pueblo of Alañgálang, as described by Chirino, was to gather the people into a pueblo, which he did, and thereafter taught them in the Christian doctrine.

So in the year 1600 there were formed two towns of 300 houses each and a third town of 500 houses which contained 4,500 souls, and of these they baptized that year more than 100.

This statement of the condition of the people previous to the arrival of the Spaniards agrees entirely with the present state of the pagan tribes of Mindanao, whose homes are scattered through the hills and forests, never in closely settled communities; and in their missionary work in recent years, on the east coast of Mindanao and the Gulf of Dávao, the Jesuits have pursued the same policy of first gathering the people together and encouraging them to lay out villages, teaching the people to build houses and a church, and, after these steps toward civilization, proceeding with their conversion. In this way doubtless many of the towns in the Philippines were formed. We have, however, records of settlements which antedated the Spaniards' arrival where the population, like Moro villages of the present day, had its houses closely clustered along the banks of a navigable stream. How attractive in many ways these steps toward ordered life were made to the native appears, I think, in the building up of the population of Bohol. The bishop of Cebú, about the end of the sixteenth century, is reported to have visited eight towns founded by the Society of Jesus, and in them to have confirmed 3,000 converts. Villages here seem to have been recruited from the wild, scattered natives of the interior coming down to the coasts and settling under the jurisdiction of the missionaries and by settlement also of the seafaring Malays.

Toward the last pages of his book Chirino notes the scourge which for centuries was to keep down the population of the Visayas. Their enemies, he says, "were Indians of the island of Mindanao who joined with the islands of Terrenate and Maluco, where they profess the faith of Mahomet. Among that people there was formed an armada of

seventy small ships, which, coming down upon these islands, which are subject to the government of Manila, did great injury in the year 1600. They destroyed the town of Bantayán and the river of Panay, where they burned the churches." They coasted around other islands, robbing and stealing, and at last they carried away as captives "a thousand and two hundred souls" (*Relación de las Islas Filipinas*, page 222).

A still more valuable account than that of Chirino's was written at the beginning of the seventeenth century. This is the famous *Sucesos de las Islas Filipinas*, by Dr. Antonio Morga. The account was penned at a time when Manila was at the height of its prosperity and power. In 1580, through the annexation of Portugal to Spain, Manila became the capital of all the Spanish and Portuguese colonies of the East. She was at this time more important in influence and in commerce than any other European colony east of the Mediterranean. Trade for the first few years of the seventeenth century was unrestricted by Spain, and the commerce of Manila with all the countries of the East from Japan to India was most notable.

Trade between America and the Far East all passed for a time through the port of Manila. This commerce was greatly desired by the Spanish colonists of Mexico, Peru, and Chile, but the selfish and rapacious merchants of Spain so influenced the policy of the mother country as to throttle this trading and prevent for more than two hundred years the legitimate development of the islands. From the early part of the seventeenth century until 1837 the Philippines were in the grasp of a protective monopoly, which not only prevented the productive development of the soil, but kept the Filipinos down to those necessarily restricted numbers which attend a population that raises nothing in excess of its daily needs. If there is one thing to be learned from this and every other study of increase of population in a fertile and tropical country it is that population increases in exact proportion to the agricultural production and export.

The parish returns of the religious orders, which cite the number of souls within their spiritual jurisdiction, supply a continuous record of the growth of population through the provinces. One such account which has been published deserves special attention as dealing with the population in the immediate environs of Manila and central Luzón. This is a memorial entitled "*Entrada de la Seráfica Religion de Nuestro P. S. Francisco en las Islas Filipinas*" (Retana: *Archivo del Bibliófilo Filipino*, Vol. I), an anonymous manuscript dated 1649. It summarizes the work of the Franciscan order in the Philippines from the time of the arrival of these missionaries in 1577 to the middle of the seventeenth century. The introduction is worth quoting, exhibiting, as it does, the motives which led to the sending of missionaries to these islands and their method of work upon their arrival.

The sacred Majesty of our King and Lord, Philip II, was moved by his most Christian and Catholic zeal to found this kingdom of Philipinas and to plant in it the evangelical doctrine, by means of our seraphic Father St. Francis. For this end His Majesty sent Father Pedro de Alfaro with 17 *religious* sons of the province of St. Joseph of the Barefooted Friars; 13 were priests, with 2 choristers and 2 lay brothers. There died on the voyage 6 *religious;* but in Mexico 6 others joined them and they arrived in Manila on the 2d of August, 1577. They were accommodated in a house of bamboo, where the marshal, Gabriel de Ribera, made them a church of wood, and the Padre Friar de Alfaro commenced upon his ministry, assigning all his companions through the provinces of this kingdom, who, getting the Indians from the rough parts of the mountains and reducing them to settled populations, were baptizing them and instructing them in the mysteries of our holy faith and erecting churches and organizing towns. To-day the province administers in these islands 52 parishes in the following form.

The territory in charge of the Franciscans is divided by this account into two districts, called "*Provincia de Tagálogs*" and "*Provincia de Camarines.*" The list of parishes begins with the "Convent of Our Lady of Candelaria of Dilao," the present Paco, a suburb of Manila.

This mission the dean, D. Francisco de Arellano, founded at his own cost, with the church and house of stone. It is outside of the walls of the city of Manila. It has 300 tributos, which make 1,200 persons of all ages. In this convent are administered the Christian Japanese with their own Japanese minister, who oversees them. There are living continually in this convent four *religious.* Three-fourths of a league along the river of Manila is the convent of Our Lady of Loreto of San Pálok (Sampáloc), a church and house of wood, which the field marshal, Pedro de Gómez, founded at his own expense, with a little chapel half a league from there. Here are administered 200 tributos, which amount to 800 persons of all ages. A father lives in this convent. A little farther up the river is the convent of Santa Ana de Sapa, church and house of stone, which the admiral, Juan Pardo de Lasada, built at his own expense. It has 200 tributos, which are 800 souls of all ages. Here lives a *religious.*

These quotations give us a very correct idea of those suburbs of Manila, now so populous and important for residence purposes, which were then little hamlets containing a few hundred souls. On the south of the city, but under other spiritual administrators, were even the hamlets of Bagumbayan, later called Ermita, from the hermitage of the Augustinians and Máalat (Malate).

Northward, in the present municipality of Bulacán, the Franciscans had other charges. The convent of San Diego de Polo had a church and house of stone with 300 tributos and a population of 1,200 souls. Here the account states that the Chinese Christian laborers received separate instruction, and there were two *religious* living in this convent continuously. A league from there was the convent of San Francisco de Meycauayán with a little chapel in the mountains. There were 130 tributos of 600 souls. Two leagues farther was the convent of San Martín de Bocaue with 700 souls. In all of these settlements we recognize names which have survived. It may be observed that the pious missionaries adopted the very ancient place-names by which

these sites were known to the natives and added to them the name of a saint, who has become the patron of the pueblo. It is no less interesting, however, to see how the native place-name rather than the name of the saint has in most cases survived. Polo, Meycauayán, Bocaue, Sampáloc—these are to-day the names of these towns. In the case, however, of Santa de Sapa, the Christian portion of the title and not the native has survived.

The entire basin of the Laguna de Bay was in the sole charge of the Franciscans. Here they had the convents of Santa Úrsula of Binañgonan, with 150 souls; San Gerónimo de Mórong, 400; San Ildefonso de Tanay, 340; Santa María Magdalena de Pililla, 1,200; San Antonio de Pila, 800; Santa Cruz, 600; San Francisco de Lumban, 2,000; Santiago de Paete, 1,000; La Natividad de Páñgil, 1,800; San Pedro de Siniloan, 450; Santa María de Mabítac, 800; Santa María de Caboan, 450; San Bartolomé de Nagcarlán, 2,800; San Juan Bautista de Lilio, 1,200; San Gregorio de Majayjay, 4,000; San Salvador de Cavintí, 450; and San Luis de Luchán, 1,600. These settlements, which then were small mission stations, with church and convent and usually two missionary friars, and which have now become large and noted towns, were then for the most part, as may be noted, the tiniest of hamlets. The largest of them was Majayjay, which had 4,000 souls, but most of them contained only from 150 to 800 people. The whole enumeration gives a total of 22,440, a figure, it will be noticed, less than the estimate made at the time of Salcedo's conquest and less than half the estimated population of 1591. At the present time this same region contains a population of over 203,000; that is, since 1649 it has multiplied about nine times.

We have only to look a little further, however, in this same memorial to note a great region of Luzón where the population has in the last three hundred years remained almost stationary. This is the Pacific coast or the contracosta of Luzón, north of the province of Ambos Camarines. As already stated, when the Spaniards arrived, this wild and almost uninhabited seashore contained a few Tagálog settlements which have remained in about their original condition and size during the three hundred and fifty years that have elapsed since they were first seen by Salcedo. In the seventeenth century the Franciscans were charged with their spiritual jurisdiction. The memorial says:

On the coast of the sea is the Convent of San Buenaventura de Mahuban, which has 200 tributes, that is, 800 persons. The church and house are of bamboo, because the town has been burned by the enemy, the Dutch. There are two *religious* here. Ten leagues from there, on the sea, is the Convent of San Marcos de Binañgonan. It has 120 tributes, 400 persons, with a little chapel 8 leagues by sea and 10 by road. There is a *religious*. Twenty-four leagues by sea is the Convent of Cadiguran de San

Antonio, which has 320 tributes, or 712 persons, a church and house of bamboo. There is one *religious* only, because his companion is staying farther on at the little chapel called Palanan, which has 250 tributes, which make 700 persons.

These figures for population are less than those reported in the Relación de Encomiendas, in 1591.

The history of these four little settlements has been obscure. They have effected almost no additional conquest of the forest or of the soil. If the population has pressed upon the regular means of subsistence, it must have steadily emigrated elsewhere. I am inclined to think, however, that the natural law which keeps the population at just about the limit permitted by the resources of the locality, has operated on this coast. It has been untouched and therefore unaffected by the great economic changes and agricultural prosperity which have converted other portions of the archipelago into famous producing and export regions. The only town showing notable increase in population is Maubán. At one time it looked as though Binañgonan (now Infanta) might attain importance as a port of entry for the Philippines. The governor, Arandia, announced the project of transferring the Cavite arsenal to this point, and having the galleons from Mexico regularly put in here and transfer their passengers and supplies across the neck of land to Laguna de Bay. This was to avoid the dangers of the freebooters in the Strait of San Bernardino. As a matter of fact, the Spanish galleons were sometimes driven in upon this coast by their pursuers. The galleon which brought the famous Father Navarrete to the islands in 1646 was run aground and burned here to escape capture, the rich cargo from Mexico being partly lost. Communication between Laguna de Bay and Binañgonan, however, still remains what it was in Salcedo's time—a rough mountain path, horribly infested by leeches. The names of these humble and isolated communities should sound familiar to American ears. It was at Baler that the unfortunate Lieutenant Gilmore and his party were captured by the insurrectos. It was at Casiguran, farther north, that General Funston, with his force of Macabebes, landed from the sea to surprise Aguinaldo, and it was at Palanan itself, farther up the coast, that the capture was made.

The reports of the Franciscan memorial upon the other parishes southward through the Camarines and Tayabas unfortunately can not be dwelt upon here. Many communities along both coasts had suffered invasion from the Dutch. The churches and houses of the priests are frequently reported to have been burned. Not the Dutch only but the pirates of Mindanao as well had assisted in the despoiling of these coasts. Walls and forts were being built for defense against the enemy, and settlements were being moved into the interior away from the coast to be out of the reach of attacking vessels. The total population of

the Camarines from Paracale south to the extremity of Albay is given in this relación as 33,610. To-day these same regions contain a population of no less than 589,000—seventeen and a half times what the population was two hundred and fifty-four years ago. The explanation of this increase and of the large population which this southern peninsula of Luzón now supports lies, I believe, in the fact that the opening of these islands to trade brought into great prominence the raising and exportation of hemp, which is of unexcelled yield and fineness in the regions of Albay and Sorsogón.

The seventeenth and eighteenth centuries were for the Philippines not merely centuries of obscurity but a long period of decadence. As already stated, the commerce of Manila was destroyed by the Spanish Government. Trade was limited to the annual galleon to and from Acapulco. The administration was not only corrupt, selfish, and inefficient, involved in constant dissensions with the church, but the revenues of the island presented a deficit year after year. At no time previous to the nineteenth century was the colonial government of the Philippines self-sustaining. A subsidy, called the situado, was supplied annually by the Government of Mexico, upon which country the Philippines, economically as well as administratively, were dependent. This subsidy came in the form of Mexican silver, which constituted the cargo of the galleon on its return trip from Acapulco, and served to maintain the Spanish and mestizo[1] population in the islands. So little were industries and agriculture fostered that the Philippines, decade after decade, were dependent for food supplies upon China, and a large part of the situado passed annually from the Philippines into the hands of the Chinese, who came here for trade. Exports of Philippine products there were none. Even Spanish citizens were forbidden to settle in the country for the purpose of building up its agricultural interests, and so jealous were the friars of their parishes that they actively opposed the settlement of others than themselves in the provinces. Added to the paralysis of internal affairs there were the incessant outrages perpetrated by the Moros. These lasted almost without cessation from the beginning of the seventeenth century to the middle of the nineteenth. The audacity of these pirates was unbounded, and the Spanish Government at no time possessed either the resources, the courage, or the capacity to defend the islands.

The capture of Manila in 1762 by the English served somewhat to break this long period of stagnation, and the changes in Europe inci-

[1] To the Spaniards, a person by descent from a Filipino mother and a Chinese father was known as a *mestizo*; if by descent from a Spanish father and a Filipino mother he was called *Español Filipino*. If the father were any other foreigner the person was regarded as a Filipino or Indio. Since American occupation the practice has arisen of calling all persons of foreign fathers by Filipino mothers, *mestizos*.—*Director*.

dent to the French Revolution, with the upheavals of government in Spain, had their effects here and led to changes which began to make themselves felt in the first years of the nineteenth century.

We are fortunate in having an excellent description of the condition of the islands under the old missionary régime. This is the famous *Estadismo de las Islas Filipinas*, by the Augustinian historian, Father Martínez de Zúñiga. (*Estadismo de las Islas Filipinas ó mis viajes por este país, por el Padre Fr. Joaquín Martínez de Zúñiga, Agustino calzado. Publica esta obra por primera vez extensamente anotada W. E. Retana.* Two volumes, 1893.) It was written about 1803, and, although drawn upon in its manuscript form by subsequent accounts of the islands—as, for example, Buzeta's *Diccionario*—the work itself did not see the light until published a few years ago.

As stated above, at the time that Zúñiga wrote, the administration of the islands and the conditions surrounding the life and productions of the native were little changed. The growing of tobacco had been introduced, but this was entirely a government monopoly, or *estanco*, and was controlled as rigidly as possible by the administrators of the revenue. Private planting of tobacco was heavily punished. The Acapulco galleon was still making its annual voyage between Manila and Mexico, and practically all the commerce of the islands was still confined to this route, although a few years earlier the Spanish Government, determining upon a different policy for the industry and commerce of the islands, had chartered the Royal Company of the Philippines and given to it a monopoly of all new trade, encouraging it to develop products for export from the islands. This company was not a success, and at the time of Zúñiga's travels had really produced no change in the agriculture of the Philippines. Governor Basco some years before had entertained numerous projects for the encouragement of agriculture. His *Plano general económico* provided for the encouragement of cotton culture, the planting of mulberry trees, and propagation of silkworms, and the growth of spices and sugar cane. In 1780 he had founded the *Sociedad Económica de Amigos del País*, which offered premiums for success in such efforts. Thus, in all these movements, we see the beginnings of radical changes, which were to transform the character of the islands, but which had not then become actually operative. The Philippines were still practically as they had been since the middle of the seventeenth century. The parishes were still under the paternal administration of the friars. The central government of Manila knew practically nothing of the state of the country except through these missionary curates. Production in excess of local consumption had not yet fairly begun, and the population was still small and only slowly increasing. As given by Zúñiga, upon the basis of the tribute, calculating four souls for every

payment of tribute, the population amounted, in the year of his writing, probably just one hundred years ago, to 1,561,251.

The travels of Zúñiga were made in company with the Spanish naval officer, Alava, who had been sent there in command of a Spanish squadron and who manifested an unusual desire to see something of the archipelago beyond the environs of Manila and Cavite.

Their first journey carried them from Pásay to Muntinlupa, on the shores of Laguna de Bay, thence to Calamba, and so through the province of Batangas. The account of their travels through these rich fields abounds in descriptions of the native fruits and plants, but it is notable that none of these are the products which have become famous as exports. The population of La Laguna province is stated by Zúñiga to have been at that time 58,912. This is only 10,000 more than it had been given in the first enrollment of encomiendas in 1591. We have seen in the early part of this report that the region of Laguna de Bay was noted at the time of the conquest for its population. This population, in the years immediately succeeding, instead of increasing, appears to have fallen away rapidly. The account of the missions of the Franciscans gives, as we have seen, a total of only 22,440 souls. In 1735 the Franciscan historian reports it at 32,488. To-day the population is certainly three times as large as it was a hundred years ago.

In Batangas the population, which before had been very small, was beginning to increase. Taal, always notable for its population, had no less than 14,000 souls.

Zúñiga's own words in which he summarizes the population of the two provinces are interesting:

The Indians of La Laguna de Bay speak the Tagálog language and are descendants of those of Manila and of the same nation with those of Batangas and Mindoro. They have the same superstitions as the others, the same practices, food, clothing, and the same customs in marriage and funeral services. In foods they are not as wretched as those of Batangas, because the lake furnishes them a great many fish which they add to their foods. The tributes that are here enumerated amount to 14,392 Indians and 336 mestizos. In the year 1735 there were 8,122 tributes, but as the pueblo of San Pablo has been removed and added to the province of Batangas, it is not strange that the increase of this province is not comparable to that of Batangas. It is true that even if this fact is taken into consideration there is a great disproportion between the rate of increase of these two provinces. Batangas had in the same year (1735) 3,151 tributes, and to-day has 15,465, and is greater than La Laguna. Even though we leave out the pueblo of San Pablo, which has 1,500 tributes, and add it to the other side, it will still be seen that Batangas has increased considerably faster than the other. I am not able to discover the reason for this difference and can only presume that the fact that Laguna has many small pueblos, where the unhappy natives suffer a great deal because of the *polos* and *servicios* (unpaid, forced labor; the corvee), and Batangas has large pueblos where the people are less molested, has been the cause of the greater increase of population in the one province than in the other. Batangas has only ten pueblos and Laguna almost thirty.

The distribution of the population in Batangas at the present time shows that its gains have been recent. The large towns, where the population is thickly gathered, lie in a fishhook form, beginning on the north near Laguna de Bay, extending southward and around to the foot of Lake Taal. Further to the east and extending to the coast at San Juan de Bocboc, the country, while rich and fertile, is not populous, even at the present day.

Mindoro at the beginning of the nineteenth century had been almost depopulated by the ravages of the Moro pirates. In Zúñiga's account it is related how these fleets from Sulu and Mindanao hung continually about the esteros and secluded bays of this island. In 1735 it had a Christian population of about 8,000 souls. In Zúñiga's day this had risen to some 12,000 or 13,000, but I think that early in the seventeenth century the island was more populous than at either of these later periods. The population had been driven from these shores by the incursions of the pirates and, as a matter of fact, it has never thoroughly reoccupied these coasts since. Mindoro is still conspicuous for its fertile coast lands with no more than tiny hamlets upon them. The island has an ill reputation for fevers, but the actual reason for its present undeveloped condition is, I believe, the long period when it lay defenseless and insecure.

The city of Cavite, which has been so important to the fleets and for the defense of Manila, receives a disparaging notice from Zúñiga:

> Cavite is a small city, ugly and dirty. It has a governor, or warden, appointed by the King, with 1,000 pesos as salary, a sergeant-major as assistant, and a company composed of Malabar natives.

He speaks of the strong defensive advantages which the place possesses, but states that the Spaniards looked upon this with indifference and without consideration of its importance for the defense of the city of Manila.

His notices of Cavite province show that this region, although so close to Manila, composed of fertile land and traversed by many streams, had been slow in receiving population. We have seen that at the time of the founding of Manila, settlements on this eastern coast of the bay were very few. Zúñiga says:

> Formerly this province was very small, and in the year 1735 there were only 1,211 tributes, not counting the Chinese mestizos or the vagrants. To-day the province has 5,724 tributes of Indians, and 859 mestizos. As there were very few Indians in these parts when the Spaniards arrived and the lands were uncultivated, with the exception of a few rice fields tilled by the natives of Bacoor and Cavite Viejo—two small rancherías—the King granted them as favors to the first conquerors, and this province is full of haciendas.

These haciendas passed into the possession of the religious orders, and this paragraph of Zúñiga's shows in a way how the province of

Cavite came to be economically in the control of the friars. When the insurrection broke out this province was the center of discontent. The inhabitants of the entire district amounted to 50,000, the most of them Indians and mestizos; 30,000 of them were registered, and the rest were a wandering population. He also adds:

In Cavite city there are very few Spaniards; the greater part of the people are Indians, Chinese, Malabars, Negroes, and the castes which result from the crossing of these races. They ought all to pay tribute to the King, but none of them does it.

Zúñiga also notes the settlement in the municipality of Maragondóng, which was formed by Christians who accompanied the Jesuits from the island of Ternate when the Spaniards abandoned the Moluccas in 1660. He states:

These people were given lands in this province to defend the coast against the Moros and to advise the government of the arrival of ships on these islands. They are Christians, and they have maintained themselves without mixing with other races until now, and they depend for spiritual and temporal oversight upon the pueblo of Maragondóng.

The settlement of this population from Ternate is still distinct from the Tagálog inhabitants of this town. It constitutes one of those curious little populations which, here and there in the islands, preserve their special character generation after generation. The mountainous country south of Cavite and between that province and Batangas, which, in recent years, has been notorious as the resort of insurrectos and ladrones, is remarked upon by Zúñiga as containing an outlaw population who were pagans and who had fled from the jurisdiction of both town and missionary.

Subsequent journeys of Alava and Zúñiga took them north into Bulacán and Pampanga. The busy commerce which flows down the streams of these provinces and reaches Manila by way of the bay was conspicuous in Zúñiga's time. He speaks especially of the great business which centered at Tambóbong, now usually called Malabón. He says:

Formerly it was hardly more than a little ranchería of fishers, dependent upon the pueblo of Tondó, but now has about 3,000 tributes, or 15,000 souls. Half of them are Indians and the other half Chinese mestizos. All those who come from the provinces of Pampanga and Bulacán pass by these places, and those of Tambóbong buy their effects and hold them, and, not content with this, they go themselves with boats by esteros which lead to these provinces and buy up the products needed for consumption in Manila, such as sugar, rice, etc.

Through this trade the inhabitants of Tambóbong, especially the Chinese mestizos, had accumulated considerable competencies. "Without doubt," says Zúñiga, "there are some mestizos owning property to the value of 40,000 pesos." This Chinese mestizo element in the

population is very evident to-day in both the provinces of Bulacán and Pampanga. It forms probably the principal element among the native owners of haciendas and *ricos* generally.

A little further on we find an interesting discussion of the question of teaching Spanish to the Filipinos. Zúñiga complains that the Spaniards unjustly charge the friars with preventing the natives from acquiring a knowledge of the Spanish tongue. As a refutation of these charges he points out that when Governor Anda, in the previous century, had ordered that no one should be *gobernadorcillo* of a town who did not understand Spanish it was necessary in almost all the towns to appoint personal servants of the padres. "Even now," he states, "if any Indian is found who understands Spanish it is because he has served some *religious* or some Spaniard in Manila." This is a very interesting statement of the extent of education in the Philippines a hundred years ago.

The prevalence of considerable numbers of Negrito in the vicinity of Angat, Bulacán, at the time of our author's visit to that province is interesting. These little blacks still live in this vicinity in considerable numbers. They traffic with the Tagálog and get out jungle products, lumber, and wax, and are still relatively numerous, but they no longer engage in the head-hunting practices which are described by Zúñiga, nor are they any longer dreaded by the Christian population. The motives which Zúñiga attributes to the Negrito in hunting for the heads of their enemies are the same which to-day impel the Igorot, Ibilao, and the typical head-hunting tribes of northern Luzón. This identity of motive and custom is very curious and might lead to speculation as to whether the Negrito adopted this custom from the Malayan or the Malayan from the Negrito. The habit of treasuring these ghastly trophies appears to be characteristic of tribes of both Melanesia and the Malay archipelago.

Zúñiga's description of the upper portion of the central plain of Luzón makes it quite clear that this great plain, covered to-day by the jurisdiction of Nueva Écija and Tarlác, was then almost unpopulated. Its few settlements were missions, the nearest of which was Mabalácat, which had 124 tributes, a population of about 600. There were also several other missions, which to-day form the municipalities of Tárlac, Bambán, 66 tributes, Capas, 110 tributes, and Patling. This last is a hamlet of the present *cabecera* of Tárlac, and of it Zúñiga says:

> It is a new station where are converted some Indians that are descendants of the Pangasinanes. The other peoples who inhabit these parts are Negritos, of whom none have been converted, for although they are willing to be baptized, this sacrament is not administered to them, because as soon as they leave the pueblo they take to the mountains without remembering that they are Christians. (*Estadismo*, Vol. I, page 422.)

Pampanga at that time embraced all the central plain north from Bulacán to "the missions of Cagayán and its mountains," but it was soon after to be divided.

There has just been established a province toward the eastern part of the island, on the contracosta, which is called Nueva Écija. I do not know but that land of Pampanga will be taken to increase the size of this new province, but I believe that this addition will be confined to the missions of Puncán, Pantabañgán, and Carranglán, which are administered by the Franciscan friars, which, although they may add considerably to the extension of territory, are of very little consequence by number of their inhabitants. Upper Pampanga (and by this he means the present Nueva Écija) is very little populated, but the lower part of the province has a numerous population, as have all the lands which are around the Bay of Manila within tide water. In the year 1738 this province had 9,275 tributes of Indians and 870 of Chinese mestizos. In the year 1799 it had 16,604½ tributes of Indians and 2,641 of mestizos, and it is to be noted that at that time more than 3,000 tributes had been separated to form the province of Bataán. From this it can be recognized how the Indians of the Philippines increase in numbers. (*Estadismo*, Vol. I, page 461.)

The eastern portion of Pangasinán, which now supports a large population in the Agno river valley, was then represented by the mission of Tayug, with its little tributary chapel of San Nicolás, which had 279 tributes, without counting the recently converted. This mission was under the Augustinians, who also administered that of Pantabañgán, until they turned it over to the Franciscans to unite with their mission at Baler, on the Pacific coast. "Pantabañgán," says Zúñiga, "has 56 houses and Carranglán 82."

This northern part of Nueva Écija, it may be remarked, is still very sparsely inhabited, and for the same reason now that Zúñiga mentions a hundred years ago—the lack of police protection. The Ibilao who inhabit the mountains of Nueva Écija are among the most persistent head hunters of northern Luzón. Their raids upon the Christian settlements of Nueva Écija are incessant, and they have repeatedly taken lives in the vicinity of Carranglán and Pantabañgán within the last two or three years.

Zúñiga's description of Zambales is not very satisfactory. Apparently he did not visit this province personally. He speaks of the people as a distinct tribe, with their own dialect, not understood elsewhere in the Philippines. At the present day, however, the province is populated on the north almost entirely by Pangasinán and Ilocano and on the south by Tagálog; and the original "Zambaleños" are confined to the central towns in the vicinity of Iba. The development of this coast has been retarded by the presence of the Moro pirates, and a hundred years ago, before immigration had begun, it was very sparsely populated. Only 1,136 tributes are reported from all Zambales by Zúñiga; this would make a population of less than 6,000 souls. To-day the population has increased—largely, as suggested above, by

reason of immigration—to the number of 100,953, a multiplication of more than sixteen in the course of a century.

The provinces which we have already described—Tondó, Cavite, La Laguna, Pangasinán, Mindoro, Bulacán, Pampanga, Bataán, and Zambales—constituted the archbishopric of Manila. The total population, as reckoned by Zúñiga, would have been about half a million souls, including the city of Manila, together with the Chinese mestizos, who paid 10,517 tributes, and who, with their families, must have amounted to several times this number of souls. In 1735, about sixty-five years before, the total number of tributes had only amounted to 37,408, or a population of 175,000.

The distribution of the Chinese mestizos is interesting. Over 8,000 of the 10,500 tributes collected from the mestizos came from the provinces immediately north of Manila—Tondó, Bulacán, and Pampanga. La Laguna and Batangas had relatively few Chinese; Mindoro scarcely a dozen. Without doubt in Batangas is to be found the Tagálog type in its greatest purity.

This archbishopric seems to have been the only part of the islands traveled by Zúñiga personally, but in brief subsequent chapters he treats of the three other bishoprics—Nueva Segovia, Nueva Cáceres or Camarines, and Cebú.

The first bishopric was made up of the three provinces of Ilocos, Pangasinán, and Cagayán. Throughout these provinces the Spanish Government maintained its tobacco monopoly. Of Ilocos, Zúñiga says:

> When the Spaniards entered here they found very few people and those in ill straits because they were always in little wars with one another and killed each other on slight pretext, as in the present day do the Indians of the mountains.

To understand the small population that Ilocos had it is sufficient to look at the enumeration of the year 1735, given us by the Franciscan historian. There were enumerated in that year, including the Chinese mestizos, only 10,041 tributes, and in the year 1800 there were 44,836 tributes of natives and 631 of mestizos. Thus the population seems to have increased in sixty-five years from 50,000 souls to a quarter of a million.

Zúñiga speaks of the Tinguian and Igorot, the pagans who inhabited the mountains of Ilocos. Some of the Tinguian had, even a hundred years ago, come down out of the mountains and formed rancherías near the Christian towns, paying tribute to the King. But one hundred years ago the Spaniards had not yet begun their conquest of the Cordillera Central, and the Igorot were entirely unsubdued.

How little the interior of the mountains was known may be seen from the fact that Zúñiga believed in the reports of a great lake existing in the Cordillera Central. He says:

> The Igorottes bring to the towns of the Christians for sale children whom they ·ture in their little wars, and although it is prohibited to make slaves of the

inhabitants of these islands, the Spaniards buy these children, not to treat them as captives, but to teach them in their houses. I myself had two little girls, and asking them how they came to be made prisoners they said they were on the bank of the sea with their mothers and some men came and carried them away. Now it can be seen that in the mountains there can not be a sea, and it was without doubt some lake which the Indians call sea in their idiom, from which it seems to me that it can not be denied that there is a lake in these mountains. They also say that there is a volcano and great earthquakes, of which in other times Ilocos has had proof.

Of Pangasinán he says:

In the time of the conquest there were very few people in Pangasinán, as can be seen from ancient and modern enumerations. In the year 1735 they found in the province (including Zambales, which was afterwards separated and formed a province apart with 1,209 tributes) only 14,661 tributes, and to-day there are numbered, between mestizos and natives, 20,556, which is a prodigious increase when we consider the many who died in the insurrection and those who have been removed from Zambales.

The population of Cagayán had not increased in proportion to that of other provinces. In 1735 it had 7,036 tributes and in 1800, 9,888. We have already seen that the Relación de Encomiendas in 1591 attributed to this Cagayán valley an even greater number of tributes than either of these. The mission of Ituy, that is, Nueva Vizcaya, was in the time of Zúñiga, perhaps, at the height of its success, but as the converts of this mission were given with those of Panique in Nueva Écija, it is not possible to determine their numbers separately.

The bishopric of Nueva Cáceres included Ambos Camarines, Albay, and the islands of Ticao, Masbate, and Catanduanes, and the province of Tayabas and the contracosta of Luzón, including Maubán, Baler, Binañgonan, and Casiguran. Horse raising was an important industry of the Camarines, and hemp is described, although the export amounted to nothing. Most of the fiber was used for weaving those distinctive Philippine textiles, such as *sinimay*, although some was made into ropes and cables for local shipyards. In spite of the continued attacks of the Moros, who especially beset this coast, the population had increased from less than 50,000 people in 1735 to probably 100,000 in 1800. The mountains then as now contained many Negrito or Aeta who have never been Christianized, as well as pagan Malayan population.

The population of Albay is not separated from that of Ticao and Catanduanes. It had, in 1800, 12,399 tributes of Indians and 146 of mestizos, where sixty years before it had only 4,664 tributes altogether. The total population of this bishopric, as given by Zúñiga, amounted to nearly 40,000 tributes, or 200,000 souls.

All the remainder of the Philippines, including the present very populous islands of the Visayas—Sámar, Panay, Cebú, Leyte, Bohol—as well as northern Mindanao, formed the bishopric of Cebú. Under

the single alcalde of Cebú were the islands of Bohol and Leyte as well, also the little islands of Siquijor, and Panglao, but the pueblos of Mindanao had been separated to form the province of Misamis, and the island of Negros had been given a separate corregidor. In all of these islands, however, in the year 1735 there were collected only 8,114 tributes, probably representing not more than 40,000 Christianized natives. In Zúñiga's day the population stood at 20,812½ tributes of Indians and 625 of mestizos, which makes the population about 100,000 souls. We have only to compare this with the present population of these islands to see how astonishing the growth has been.

The province of Sámar included the entire island of that name, with adjacent islets. Its rough and mountainous character is described as well as its plains, so fertile for the production of rice and abacá. "All the productions of the other islands flourish on Sámar," Zúñiga says, "but the natives are content with the above-mentioned products, to which might be added cocoa and cacao." The tributes of the province in 1800 were 3,042 Indians and 13 mestizos. This would give a population for the entire island of hardly more than 12,000 souls. To-day Sámar, in spite of the recent ravages of war, is able to report a census enumeration of 265,000 souls.

Leyte, which had been conspicuous for its population in the early years of the conquest, had also lagged far behind the northern parts of the archipelago. Zúñiga says:

> The *cabecera* of Leyte is Carigara, a small town, for which reason the alcaldes mayores are accustomed to live in Barugo. The tributes of the whole province are 6,678 Indians and 37 mestizos. If we add the Indians and mestizos of Sámar it makes a sum of 10,860 tributes. In the year 1735 these two islands made one province and had 11,331 tributes, from which can be seen that the people of these islands in place of increasing have diminished. No other reason need be sought for this than the incursions of the Moros, who, concealed in the many little bays, have made many ravages upon all the pueblos. The Indians of Leyte are in all respects like those of Sámar. They were instructed by the Jesuits in the Christian religion, but after the expulsion of the Jesuits the Augustinians entered into these curacies, but some of these fathers were captured by Moros, others went insane, and they were forced to cede to the secular (native) clergy a half of their ministries. (*Estadismo*, Vol. II, page 70.)

On the east coast of Mindanao was that ancient outpost of Spanish power, the settlement of Caraga, under the administration of the Recoletos. In 1735 Caraga had 1,357 tributes, which had risen by 1800 to 3,497. After the return of the Jesuits, about 1860, and their reoccupation of these missions on the east coast of Mindanao, rapid increases in the Christian population were made by their efforts among the heathen tribes of the interior, whom Zúñiga notices under the names "Tagaboloyes" and "Manubo." Caraga a hundred years ago was an

expensive establishment to the Spaniards, involving as it did the maintenance of *presidios*, or small forts, for defense against the Moros, as were also the other southern outposts, Misamis and Zamboanga. The latter post is the most famous of all the presidios of the Philippines. After varying fortunes during the early century of Spanish rule, it was abandoned in 1662, but in 1718 the post had again been taken by the Spaniards, when the present fortress was constructed. "Zamboanga had," Zúñiga says, "1,562 souls, counting Indians, soldiers, Spaniards, and members of the presidio," and it appeared to be doubtful whether it would greatly increase. It formed a large portion of the expense of the defense against the Moros, which amounted to 100,000 pesos a year.

The island of Negros, which has since become so famous for its sugar haciendas and large population, had in 1800 no more than 30,000 souls, if we except the still relatively numerous pagan Malayan and Negrito population of the mountains. It paid 5,741 tributes. No hint of its subsequent great economic importance is to be found in the brief page and a half with which Zúñiga dismisses this island.

The island of Panay was divided into three provinces, which still exist—Iloílo, Cápiz, and Antique. The first paid 29,723 tributes, both Indians and mestizos, whereas sixty years before the number of tributes, which then included some from the islands of Negros, amounted to only 11,695. The pagan peoples of the interior, "Mundos," contracted by the Indians from the Spanish *Vagamundos*, and the Negrito, are noticed briefly. Then, as now, the province was famous for its beautiful homespun fabrics.

Cápiz, which in 1735 had 9,267 tributes, had had a slight growth in population and in 1800 reported 11,459 tributes of Indians and 89 of mestizos. The Christian towns of the province were subject to attack on the one hand from the fleets of the Moros and on the other by bands of wild Malayan and Negrito. Antique was still more sparsely inhabited. Although the collection of the tribute was difficult, about 9,288 tributes of Indians being collected, there was not a single Chino-mestizo, and "This," Zúñiga says, "is unfortunate, because, although the Chinese are somewhat prejudicial to towns on some sides, they supply on the other hand many needs." The population seems to have been very imperfectly Christianized, and Zúñiga states that four years before the town of Sibalón had employed certain women, known by the ancient Visayan title of a priestess, "*babaylanes*," to offer sacrifices to idols of wood. There was a notable outbreak of *babaylanismo* in connection with the Philippine insurrection of recent years.

Last of all of the Philippines, Zúñiga mentions the Calamianes, which then, as now, had a considerable Christian population, exposed though it was to the terrible attacks of the Moros. We have seen

that the encomiendas here reported, in 1591, 2,500 tributes, but in 1737 the entire alcaldia had only 1,384 tributes, due undoubtedly to the fact that they had been continually persecuted by the Moros of Sulu and Borneo. In Zúñiga's time they had increased again and reported 2,289 tributes. The cessation of the Moro ravages has in recent years given to these little islands an opportunity for increasing, and to-day they are exceedingly populous.

Zúñiga fully realizes the capacities of the race for increase and the coming prosperity of the islands. This is apparent in every discussion. His constant plea is for better defense, for better government, for freedom from official abuses, for the removal of monopolies and restrictions which hamper production, and for the forwarding of other measures which might conduce to the prosperity and development of the colony. It is no less to be remarked, however, that in no case does he dream of the great importance the islands were shortly to assume in foreign trade. In spite of his liberality of mind, he looked continually at the situation from the standpoint of the missionary. The greater freedom from governmental interference, the greater the power of the friars. His ideal was the ideal of the religious orders always—a flourishing, prosperous body of docile, ignorant peasantry, untouched by modern life, unaffected by the streams of commerce, and only remotely cognizant of civil power, but led and dominated on secular as well as spiritual sides by the friar himself. His closing words are interesting:

> It is thus proven that in a little more than sixty years the individuals of this country have doubled, and within a little time there will be in the islands two million souls, who will no doubt form an establishment prosperous and of great utility to the nation. God grant to our superiors the wisdom to accomplish such an end.

If we start, then, with our original estimate of the population at the time of the conquest (1565) of 500,000, although, as we may see, there is reason for considering that this estimate is too large, and accept the estimates given at different epochs, we have the following apparent growth of population:

1591, the estimate in report on the encomiendas, 667,612 souls.

1735, or thereabouts, the estimates of Father San Antonio, the Franciscan historian, 837,182 souls.

1800, according to the estimates given by Zúñiga, 1,561,251 souls.

Subsequent increases may be briefly summarized:

About the middle of the century, 1845, we have a notable discussion of population in the *Diccionario Geográfico, Estadístico, Histórico de las Filipinas*, by the Augustinian missionary Fray Manuel Buzeta. I can, perhaps, do no better than to quote at some length from his summary of the growth of population as found in Volume II, page 53:

> *We have* already seen how, in the last years of the past century and the first of *this century, the* political condition of the Philippines presented in 25 provinces,

1,522,221 souls and 312,251 tributes, and according to the state of the population published by order of its excellency, the ayuntamiento of Manila, this population was increasing so that in 1808 the number of souls was 1,741,034; in 1812 to 1,933,331; in 1815 to 2,052,992;[1] in 1817 to 2,062,805; in 1818 to 2,106,836.

Various data which we have, and for whose exactness we can not vouch, give in 1829, 2,593,287, and in 1833 a population of 3,153,290. The *Guia de Manila* of the year 1840 presents the population as 3,209,077, and, compared with the population that we have seen was reported in 1735, it would appear that the 837,182 souls of the earlier epoch were to those of 1840 as is 1 to 3, a proportion which represents a gain of 283 per cent in one hundred and five years. In the five years since the population of the Philippines had been increasing at the rate of 1.7 per cent per year, so that in 1845 the number of souls was 3,488,258.

Notable economic changes had taken place and the population was increasing with great rapidity. Buzeta's total population for the islands figures out at 3,488,258. Thus in the fifty-eight years between 1845 and the present time the population has just doubled.

We may tabulate this increase as follows:

YEAR.	Population (civilized).	Interval (years).	Actual increase.	Per cent increase.	Rate of increase per year.
1591	667,612				
		144	169,570	25.4	0.15
1735	837,182				
		65	724,069	86.5	0.96
1800	1,561,251				
		45	1,927,007	123.4	1.80
1845	3,488,258				
		58	3,499,428	100.3	1.21
1903	6,987,686				

The above data, when examined in this way, are not wholly convincing, and lead one to doubt whether the Relación de Encomiendas of 1591 did not considerably exaggerate the population. Certainly our estimate of half a million souls at the time of the conquest is not too small. My own belief is that the population of the archipelago was considerably less when Legaspi landed on Cebú. But this conclusion will, I believe, be viewed with such surprise by many students of the Philippines that I have hesitated, on grounds of conservatism, to place it lower, inasmuch as our data for settling so important a point are few.

If we accept the estimate of the encomiendas as approximately correct, the above table shows that the increase of population during the first hundred and fifty years of Spanish rule was exceedingly small. In fact the race seems to have lost numbers for the first fifty years, and to have been at little better than a standstill for the succeeding

[1] The figure as given by Buzeta contains without doubt an error, which is here corrected.

century. After the middle of the eighteenth century, however, increase is notable, amounting to 86 per cent in sixty-five years. This increase, moreover, was due almost entirely to the growth of population on the island of Luzón. The Visayas, except Panay, made little gain, lying exposed as they did to the persistent fury of the Moro. To-day the Visayans far outnumber any other tribe, but this ascendency has been achieved practically within the last seventy-five years and since the crushing of southern piracy.

The greatest increase seems to have been in the first half of the last century, when, in about forty-five years, the population rose from 1,561,000 to 3,488,000, a rate of 1.8 per cent per annum. This rate will compare favorably with that of almost any of the known rapid increases of population. The phenomenal growth of the people of the United States from 1800 to 1810, which attracted the attention of Malthus, was 3.15 per cent yearly. The yearly rate of increase in Java, which has been regarded as astounding, has been for the last century on an average of 2.1 per cent. The increase of population in Japan for the year 1898 was 1.22 per cent. (*Statesman's Yearbook for 1900.*)

The average annual increase in the Philippines for the last fifty-eight years has averaged only 1.21 per cent a year, showing a decrease in rate over the first half of the century, but it is to be further considered that the population of the Philippines was probably as large six or seven years ago as it is to-day. Within the last five years it has suffered from war, destruction of industry, and, most of all, from a recrudescence of smallpox and a terrible epidemic of cholera. The total of these losses can not be determined, but the deaths, mostly from cholera, in the single province of Iloílo last year took nearly one-sixth of the population, according to the census returns. The population can scarcely have gained any in the last six years. The actual deaths by war alone were not large enough to affect greatly the number of inhabitants, but the shifting and changing of population, the burning of thousands of homes, and, especially, epidemic disease, probably reduced the population. Several times in the last fifty years the islands have been ravaged by Asiatic cholera, and this alone is adequate to explain the difference in rate between the first and second halves of the century. The actual loss to population between 1881 and 1883 from epidemics was not accurately reported, but it was unquestionably a disastrous setback, not made good by several years of normal growth and prosperity.

The conclusion to be derived is that the Christian Philippine population shows a power of multiplying scarcely exceeded by any race of people. The hope of building up here in the course of a few generations a people equal in numbers and national resources to the Japanese

at the present time does not seem illusory. Given a prolific stock, expanding prosperity and commerce, and favorable political conditions, population, as historically proven by a hundred instances, can go up by leaps and bounds. I believe that all these conditions together may be realized here in the Philippines. A great deal depends also upon the mental attitude of the people. If it be hopeful, aspiring, cheered by increasing gains and opportunities—then is there added a factor of the utmost consideration. Population has no deadlier enemies than despondency and melancholia. There is a deep wisdom in the intentions of the American Government to meet more than half way the eager ambitions of this race.

The astonishing development of the population in the last century was coincident with the economic advance of the islands, the two lines of growth clearly having progressed together.

The first quarter of the nineteenth century brought events to the Philippines that were destined to revolutionize society and industry. Mexico obtained her independence from Spain in 1820, and after that all communication between the Philippines and what had been an over-colony ceased. Trade between Spain and the Philippines was now carried on by vessels sailing around the Cape of Good Hope. The last Philippine galleon had returned from Mexico in the year 1814. The Royal Philippine Company, which held a monopoly of trade, ended its life in 1835 without having achieved either financial success or lasting economic benefits to the islands. This was followed two years later, in 1837, by the opening of the port of Manila to foreign trade. This is the decisive date and event in the history of Philippine industry and commerce. How little the islands had shared in the trade of the world is to be seen from the statistics of the year 1810. Imports in that year amounted to 5,329,000 pesos, and more than half of this was silver sent from Mexico. Imports from the United States and from Europe, including Spain, had amounted to 175,000 pesos. The exports for the same year were even less, the balance of trade being against the archipelago. This amounted to 4,795,000 pesos, but of this amount over a million and a half was Mexican silver exported to China. The whole amount of exports to Europe and to the United States was only a quarter of a million pesos. There was practically no exportation of those great staples—hemp, tobacco, sugar, coffee, and copra, which subsequently enriched the islands and fostered this phenomenal growth of population. In 1831 the exportation of hemp amounted to only 346 tons, but the immediate effect upon production of the opening of the port of Manila to foreign trade is seen in the exportation six years later of 2,585 tons. By 1858 the exportation of this article alone had risen to 27,500 tons. Of this amount nearly two-thirds went to the United States for the rigging of those ships which made the American Navy

famous for speed and daring throughout the first half of the last century. Of sugar the export in 1858 amounted to 557 piculs, of which more than half went to Great Britain. In 1814 general permission had been given to foreigners to establish trading houses in Manila, and by 1858 there were 15 such established, of which 7 were English and 3 American. (See Bowring, "A Visit to the Philippine Islands.") In 1855 three other ports were opened to foreign commerce—Sual in Pangasinán, to promote the exportation of the surplus production of rice; Iloílo and Zamboanga; and in 1865 Cebú likewise was made an open port. From these dates the prosperity of the Philippines advanced steadily and rapidly without interruption until the outbreak of the Philippine revolution six years ago. To this period is due the propagation of the hemp fields of Ambos Camarines, Albay, and Sorsogón; the planting of the innumerable coconut groves; the sugar haciendas of Pampanga and Negros; the tobacco fields of Cagayán and the Iloco provinces; the coffee of Batangas, and the utilization everywhere of the specially adapted soils for the production of these admirable articles of trade. One thing is to be noticed, and is important in estimating the future development of the islands. The money that was invested here was not brought in by capitalists but was made here. Haciendas arose from small beginnings, and this continued prosperity apparently suffered no diminution or check until it was interrupted by the ravages and desolation of warfare. One point must be noticed, however, in regard to the addition of this wealth to the islands, and that is that it was not evenly distributed among the population but went to enrich certain families, largely Spanish and mestizos, as well as the old native aristocracy—the "*principales.*" The great mass of the population secured few gains or material benefits from this increased wealth of the archipelago.

It was during this period of prosperity that measures were adopted for the laying out of pueblos and the erection of public edifices, and during this time the fine homes of the wealthier class of the native population were constructed.

This advance in material condition on the part of the leaders of the people was paralleled by a corresponding quickening and awakening of the mind. In 1810 the Spanish Cortes, during the brief reign of constitutional government, in a burst of liberal enthusiasm, had declared that the natives of the colonies of Spain were of equal rank and dignity and entitled to the same rights and privileges as Spaniards of the Peninsula. This declaration was received in the Philippines with great satisfaction by the native population, who considered that they were thereby relieved of the burdensome service of the corvee. With, however, the return to power of the autocratic Bourbon, King Ferdinand VII, in 1814, these liberal measures were abolished. This

was followed in the Philippines by the famous revolt of Ilocos, the first insurrection in the islands in which ideas of liberal government seem to have entered. Previous outbreaks had been simply the uprisings of an oppressed and ignorant population, owing to exactions of encomenderos or missionaries.

The growth of a revolutionary sentiment in these islands is really due, however, to the attitude of the Spaniards themselves, to the opinions of administrators of liberal mind and heart as well as to the complaints of native born Spaniards who, in accordance with Spanish law, were never admitted to equal privileges with "*Peninsulares.*"

Another event is to be noted in the spiritual development of the people, and this was the establishment of a public school system by the minister of war, O'Donnell, in 1860. This policy eventually gave to the islands a primary school, though of limited capacity, for every organized pueblo. At the same time the return of the Jesuits to the Philippines made provision for the higher education of the natives, which, heretofore, had been wholly neglected. From this time on, Filipinos were able to secure a training which fitted them to be the spiritual and political leaders of their own people. Out of all of these events, partly material and partly spiritual in character, came the preparation for revolt and independence. The condition of the islands just previous to the events that led to American occupation seems to have been one of great economic prosperity, the advantages of which, however, were enjoyed only by a limited class, and of rapidly rising aspiration and ambition on the part of this educated Filipino class, which was opposed by a very reactionary and hostile party, headed by the religious orders, who saw in the advancement of their charges the end of their domination. The events of the last few years have continued to raise the political and intellectual aspiration of the race. They have, moreover, communicated these ideas, which at first were held by the few, very largely to the mass of the population, so that to-day the humble peasant or fisherman entertains hope for the social advancement of his children.

Thus, the Christian population of the islands has risen at the present time to a total of practically 7,000,000. With its conversion and long subjugation to friar and civil power all parts of the islands have received a similar grade of culture. A town in the Cagayán valley presents the same style of architecture, the same surrounding barrios, has the same kind of stores and similarly dressed people as a Christian municipality on the island of Mindanao. In spite, however, of these facts, the population has remained separated into practically the original tribes or groups, each speaking a different idiom and feeling strongly its separateness from the others. Each one of these tribes has adhered closely to its own original habitat, although there has been

some migration of Ilocano into the Cagayán valley and south into Pangasinán, and small colonies of Tagálog have settled in certain towns of the Visayan Islands.

Beginning at the north end of the archipelago an enumeration of these Christian tribes is as follows:

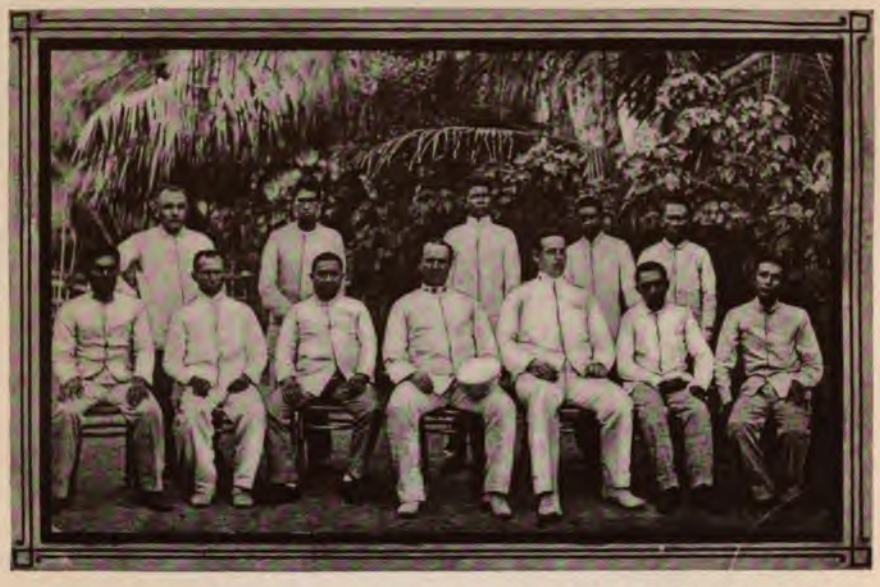
The two little clusters of islands lying between Luzón and Formosa, the Batánes and Babuyanes, had formerly a population which seems to have been a connecting link between the Igorot of the northern Cordillera and a similar primitive Malayan element on the island of Formosa. These islands were early visited by Spaniards, but, owing to their lack of fertility and to their lying in the path of the typhoons, they never attracted Spanish settlers, nor have they had any great development. The Relación de Encomiendas says of the group nearest to Luzón:

> This encomienda of the Babuyanes are two islands given to Esteban de la Sernay Francisco Castillo. One is distant from the other 2 leagues. It has 500 payers of tribute, which are 2,000 persons. They are all wild (*alcadas*). They will need one minister to doctrinate them, living in Puga and visiting Aparri. The islands of Calayán and Camiguing were also under encomiendas, the first given to the same Esteban de la Serna, and paying 400 tributes; the second to Alonzo Martin, and paying 500 tributes. There are other islands of which we have received notice, although as yet they have not been seen, and are still to be given in encomiendas.

This is evidently a reference to the Batán group, lying 100 miles farther north and much closer to Formosa. These estates, however, appear to have been practically worthless. Morga, writing twenty years afterwards, says of the Babuyanes:

> They are not "encomiended," nor is tribute collected among them, nor are there Spaniards there, because these people have little reason and knowledge of government, and there have neither been Christians made among them nor have they justices.

This condition seems to have been continued until about the year 1585, when Governor Basco reoccupied the islands and Dominican missionaries formed missions thereon. For this service to the Crown the governor received the high-sounding title of "Count of the Conquest of the Batanes." A catechism of the dialect spoken in the Batán Islands was published by a friar in 1834. An examination of this vocabulary has led Dr. Pardo de Tavera to the conclusion that the aboriginal tongue differed considerably from the other Filipino dialects, containing the sound "tsch" and a nasal sound like the French "en." At the present time, however, I am inclined to think that the population of the Batanes, as well as of the Babuyanes, is made up very largely of Ibánag from the Cagayán valley, introduced there as colonists by the Dominican friars. The population at the present day is Christian, and is largely devoted to stock raising.



GOV-SUPERVISOR PHILLIPS AND PRESIDENTES AND ENUMERATORS, CUYO, PROVINCE OF PARAGUA (CUYÔNS).

GOV-SUPERVISOR DICHOSO AND PRESIDENTES, PROVINCE OF ISABELA (CAGAYANES).

The people living along and close to the banks of the great Río Grande de Cagayán from its mouth southward to Echague, and also along the lower waters of its affluent, the Río Chico, as far up this stream as Tuao, belong to a common stock whose dialect is called *Ibánag*, although this people are better known under the Spanish designation *Cagayán*. They seem to have been derived from one of the branches of the seafaring Malays, and I think this colony was established by voyagers of this great stock very soon after the settlements on the coasts of Ilocos and southern Luzón. The population, as has already been observed, was relatively numerous in 1591, and although it has never extended its cultivation away from the immediate banks of the river itself, the population has here grown to considerable numbers owing to the great richness of the soil and the early cultivation of tobacco. Around Echague, in the province of Isabela, the dialect differs somewhat from Ibánag and is known as *Yogad*. Throughout this valley may be found settlements, usually little barrios of the towns of Ilocano who have come as immigrants from Ilocos Norte. This Ilocano population has not mingled very greatly with the Cagayán, but has preserved its separate tribal feeling and dialect in great part. This immigration was to a considerable extent fostered, encouraged, and perhaps impelled by the Spanish Government in order to supply colonists and laborers for the tobacco haciendas of this great valley, which for years constituted a government monopoly, or *estanco*. The Ilocano have also migrated still farther south into the secluded valley of the upper Magat, which constitutes the beautiful but isolated province of Nueva Vizcaya. The bulk of the population here, however, differs very decidedly from nearly all the rest of the Christian population of the archipelago. It is made up of converts from two of the mountain Igorot tribes, who still have numerous pagan representatives in this province and in Isabela. These are the Isanay and the Gaddang or Gaddan. Early in the eighteenth century the Augustinians sought anew to extend their missionary undertakings. In 1632 they established a mission in this secluded valley, known as Ituy or Isinay. (*Relación de los Sucesos de la Misión de Ituy en el Archivo del Bibliófilo Filipino*, Vol. XI, page 5.) This mission resulted in the addition to the Spanish Government of a new province, and led to the establishment of the towns of Aritao, Dúpax, and Bambang, inhabited by the Christianized Isanay, and of Bayombong, Bagábag, and Ibung, inhabited by Christianized Gaddang. The fine old churches which still ornament these towns date, some of them, from as early as 1776. The population, however, has not greatly multiplied, and at the present day amounts to only three or four thousand of each of these tribes, the remainder of the Christianized population of the province being made up of Ilocano immigrants.

The *Ilocano* or *Iloko* is one of the most industrious and promising tribes of the archipelago. Their home is the narrow coastal plain facing the China sea from the northern extremity of Luzón to the Gulf of Lingayén. Their migrations have already been noticed. The word Iloko is the designation by which these natives were known at the time of Salcedo's conquest of this coast in 1572. The word is doubtless related to Ipukao, Ifugao, and Igorot, the prefix I in Filipino language meaning "people of." (*Etimologia de los Nombres de las Rasas Filipinas*, by Dr. T. H. Pardo de Tavera, Manila, 1900.) I find the first mention of the name and tribe Iloko in the Relación which we have already frequently quoted on the conquest of Luzón, which was written at Manila in 1572, just previous to Salcedo's exploration of the north. The writer says:

> From Manila this island runs a great distance toward the west; and on its south side (note the errors in direction) there is a province called *Yloquio*, which they say is very rich in gold. The Spaniards have not seen it yet.

Adjoining the Iloco on the south are the Pangasinán. I think this name is a corruption of *palyasinán*, which, in Pampango, means "saltmakers." At the present day saltmaking is still an important industry in the marshes near Dagupan, where the Spanish explorers first landed. As revealed in the Relación de Encomiendas, the Pangasinán, at the time of the Spanish conquest, were a people small in numbers. They are still one of the less numerous Christianized tribes. The province of Pangasinán contains many immigrants from Ilocos, while some of the Pangasinán themselves have crossed the mountains into Zambales.

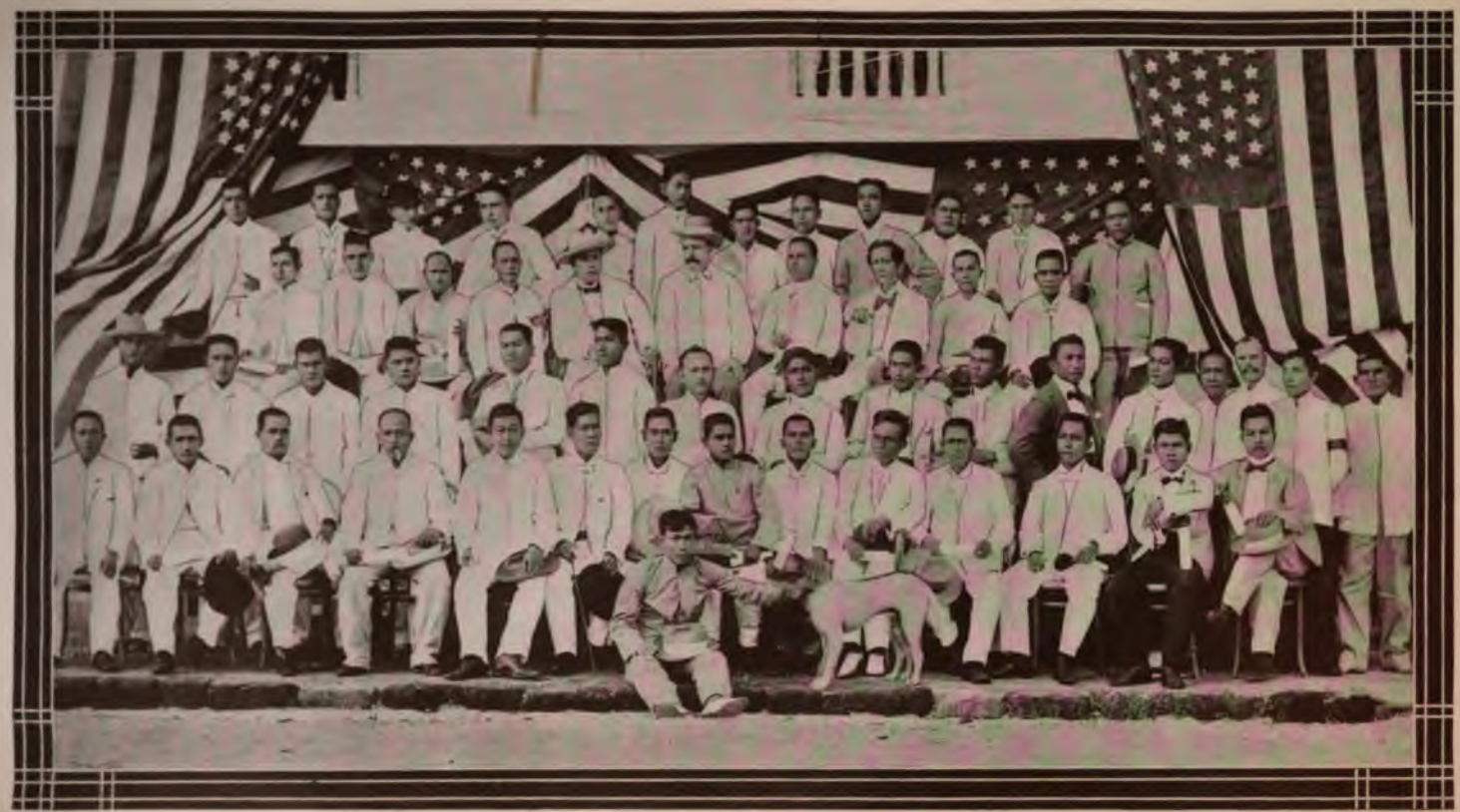
The Pampangan occupy the rich central valley of Luzón, the flood plain of the Río Grande de la Pampanga. The ancient form of this name is *Capangpangan*, which is composed of the word *pangan*, "bank of the river," the prefix *ca* or *ka*, signifying a place, and the suffix *an*, which means multitude, the whole meaning "where there are a great many river banks," a natural designation for this region when we consider the innumerable esteros and river mouths which cross the lower part of this province facing the north shore of Manila bay. The first notice I have found of this tribe or district is in the same Relación of the conquest. It says:

> There came to the governor certain Indians to tell him that in the province of Capanpanga were many and well populated rivers and that most of the inhabitants were unwilling to be friends of the Spaniards.

Even at the time of the conquest at least the southern part of this province, which then included what is now Bulacán, contained a relatively large population. The region was of great importance to the Spaniards as furnishing lumber, building stone, and food supplies for

GOV-SUPERVISOR FÁVILA AND PRESIDENTES, PANGASINÁN (PANGASINANES).

GOV-SUPERVISOR JOVEN AND PRESIDENTES, PROVINCE OF PAMPANGA (PAMPANGANS).



ENUMERATORS, PROVINCE OF SORSOGÓN (BÍCOLS).

GOV-SUPERVISOR JUAN CAILLES AND PRESIDENTES, PROVINCE OF LA LAGUNA (TAGÁLOGS).

PRESIDENTES AND ENUMERATORS, PROVINCE OF LA LAGUNA (TAGÁLOGS).

the city of Manila and the shipyards of Cavite. It has in recent decades been noted for its sugar cane haciendas and rice fields.

The best known of the Filipino peoples and perhaps the most important, though not the most numerous, is the Tagálog. Dr. Pardo de Tavera derives this name from the common prefix *taga*, native or inhabitant of, and the archaic root *alog*, no longer found in Tagálog, but persisting in Pangasinán and signifying "low lands covered with water in time of storms." I am uncertain how early this name came to be used. The Spanish conquerors of Manila usually spoke of the inhabitants as Moros. The central Tagálog population at that time seems to have been farther east and south near Lake Taal in Batangas, then known as Comintan, and on the shores of Laguna de Bay. By the beginning of the seventeenth century the word "Tagalo" finds frequent use in the Spanish writings. The Tagálog have had more contact with outside peoples than any other of the tribes and are probably most mixed in blood and descent. In certain cases the considerable proportion of Negrito blood left by the aborigines is evident in the population, though probably not more so than in the inhabitants of Ambos Camarines and of Negros. Hindu influence is more marked in the Tagálog language than in any other of the Filipino dialects unless it be that an equal Sanskrit influence can be discovered in the Moro dialects of Mindanao and Sulu. Manila bay has from very ancient times been a resort of commercial fleets from all quarters. Chinese junks from Fukien were trading here as early as 1250, and so were those of Siam; while, when the Spaniards arrived, the Mohammedan Malays of Borneo were in frequent resort here and had founded not merely Manila and Caintá, but probably other settlements in Bulacán, on Laguna de Bay, and the coast of Batangas. The Tagálog, excluding the city of Manila, which contains a large proportion of almost every Christianized people of the island, inhabit the greater part of central Luzón, including the provinces of Bulacán, Rizal, Bataán (with the exception of the little town of Sámal), Cavite, La Laguna, Batangas, Tayabas, and part of Ambos Camarines. The proper form of the word is as it is pronounced by the native himself, Tagálog, the same for both singular and plural, substantive and adjective, with accent on the second syllable.

The broken peninsula in which the island of Luzón ends and which is one of the richest and most important hemp regions of the islands has been inhabited since Spanish times by the Bícol. The name is derived from the Bícol river in Camarines Sur, on which is situated the old and important city of Nueva Cáceres. The author of the Relación of the conquest says: "Near these mines (of Paracale) is a great and very well populated river, which is called Bico." This is, I

think, the first record of the word. Bícol in Tagálog is the name of a tree. The language is decidedly different from Tagálog and more nearly related to Visayan, of which it is considered a branch.

The Visayans were, as we have seen, the first Filipinos with whom the Spanish came in contact; and, as we have further observed, in spite of their small number at the beginning and the continued depredations among them of the Moro pirates, they are to-day the most numerous of all the Philippine tribes, and occupy regions where the density of population is the greatest in the archipelago. The name first applied to these islanders by the Spaniards was *los Pintados* (the painted) and was evidently because of their habit of tattooing, which practice is carefully described by Chirino. This name was long in use. The word Visaya occurs in the Relación of the conquest, which speaks of "the painted Indians," our friends, who in their own language are called "Viseys." The language has two main dialects, which are quite different from one another—the *Cebuano*, which is spoken on Cebú and in Negros Oriental, and the Panayano, spoken on the islands of Panay, Sámar, Leyte, Bohol, northern and eastern Mindanao, Masbate, and Romblón.

In Zamboanga and at a few other old Spanish ports of southern Mindanao there is a Filipino population considerably mixed, but in which Visayan blood predominates. These people are the descendants of Christian slaves rescued from the Moros, of camp followers of the Spanish garrisons, of Visayan colonists introduced by Jesuit missionaries, and in some cases of convicts drafted into the Spanish military forces. They do not, however, speak Visayan, but a corrupt Spanish, which is known by the term *Chabacano* (Spanish, meaning "rough," "rude").

This enumeration covers, I believe, with sufficient exactness, all the Christian peoples of the islands, except those of Cuyo and the Calamianes group. These little islands had an aboriginal population of primitive Malayans which on the island of Busuañga still exists in the uncivilized Tagbanúa, but the Christianized element was made up very largely by immigration of the seafaring Malays from the south. Owing to the force of the monsoons, which for the greater part of the year sweep these islands, traffic between them is very difficult, as a boat setting out in one direction finds it impossible for months to return. In this way local isolation and considerable variation of dialect has arisen, but the idiom which predominates is known as *Cuyono*, or *Calamián*. Though spoken by a relatively small population, I believe it must be considered one of the separate languages of the Christianized Filipino population.

GOV-SUPERVISOR CRISOLOGO AND PRESIDENTES, PROVINCE OF ILOCOS SUR (ILOCANOS).

GOV-SUPERVISOR AGCAOILI AND PRESIDENTES, PROVINCE OF ILOCOS NORTE (ILOCANOS).

GOV-SUPERVISOR LARENA AND PRESIDENTES, PROVINCE OF NEGROS ORIENTAL (VISAYANS).

To summarize, we have the following as the civilized or Christian tribes: The Bícol, Cagayán, Ilocano, Pampangan, Pangasinán, Tagálog, Visayan, and Zambalan.[1]

NON-CHRISTIAN TRIBES.

The classification of the Christianized tribes of the Philippines is a comparatively easy task. We have varied information, including dictionaries and grammars of these languages, that has been slowly accumulating for three centuries, but when we attempt to classify and enumerate the pagan and Mohammedan tribes, which up to this point in our treatment we have purposely left to one side, the result is not so satisfactory. These tribes have become known even to the Spaniard only within recent decades. When Zúñiga wrote—a century ago—the Moro was fiercely hostile, and Spanish efforts at defense were at their lowest ebb. Of the pagan tribes of northern Luzón he had no more real information than was known to Morga, two hundred years before. But in the last fifty years of Spanish rule a great change was effected. Not only was the Moro defeated and his sovereignty of southern Mindanao and Sulu wrested from him, but Spanish soldiers and missionaries established their forts and missions throughout the great Cordillera Central of northern Luzón. These achievements served to draw attention to the extremely rich ethnologic field presented by the Philippines, and the islands were not only visited by German and French scientists, but in Europe generally the archipelago came to be regarded as the key to many of the complex problems of race presented by the countries of the Far East and Malayo-Polynesia.

However, one impression that has gained foothold in regard to the tribes of the Philippines I believe to be erroneous, and that is as to the number of distinct types or races and the multiplicity of tribes. Owing to the fact that nowhere in the Philippines do we encounter large political bodies or units, we have a superlative number of designations for what are practically identical peoples. The tribe itself as a body politic is unknown in this archipelago. The Malayan has never by his own effort achieved so important a political organization. Such great and effective confederacies as we find among the North American Indians are far beyond the capacity of the Filipino of any grade. For example, among the powerful and numerous Igorot of northern Luzón

[1] It will be observed that throughout his sketch of the population Dr. Barrows has adopted the same form for the singular and plural of tribal names. While the Census Bureau has not changed this arrangement, it is the opinion that the plural of all the tribal names should be formed in accordance with the rules of American orthography by adding *s* or *es* to the singular. For example: Igorot, Igorots; Bilan, Bilans; Bícol, Bícols, etc.—*Director.*

the sole political body is in the independent community. Under normal conditions the town across the valley is an enemy and seeks the heads of its neighbors. I have stood in a single Igorot town and looked across the steep hillsides and river valleys where, in every direction within a radius of six miles, a man's life of that town would have been unsafe. His head would unfailingly have been taken had he ventured unprotected so far from home. This fact of deficient social cohesion has resulted in the application of an indefinite number of designations for these mountain Igorot, who, throughout the Cordillera for a distance of 150 miles, are all members of one common stock.

Errors in nomenclature prevail everywhere in the islands. Sometimes three or four different terms have been applied by different localities or towns to identical peoples, and all these designations have gone to swell the reputed number of Philippine tribes. Thus Blumentritt credits fully eighty-two such distinct tribes; the Jesuits, who have been diligent collectors of information here, as everywhere, report sixty-seven tribes; and the enumerators for the census turned in on their schedules a total of about one hundred and sixteen different or differing titles, which had to be explained and reduced to system.

The researches of the Ethnological Survey of the Philippine Islands, which have been prosecuted for the last two years, have resulted in throwing considerable light on the relations of these numerous tribes and in greatly reducing the number of necessary designations. Briefly summed up, the pagan tribes of the islands may be described as follows:

The aborigines of the archipelago are unquestionably the Negrito. This race has long attracted interest as one of the pygmy peoples of the globe. They are among the smallest of mankind. For example, nine full-grown men belonging to one community measured by me had an average stature of 1,450 millimeters (56.5 inches). The tallest of these nine measured 1,502 millimeters, and the shortest 1,374 millimeters. The women are notably smaller. They have a dark skin with a yellowish "undertone," with the broad, flat nose and curly hair of the negro race; their heads, however, are not long like the African and Melanesian, but very round. They live in a wholly savage state in many parts of the Philippines. The origin of these little people is unsolved, but even in historic times we know that they were more widely distributed, if not more numerous, than now, and the occurrence of the same little type in the Malay peninsula and on the Andaman Islands in the Indian ocean leads to the inference that they were once in perhaps even continuous occupation of the Malay archipelago and the adjacent mainland from the Andaman Islands to the Philippines. They were described as long ago as the early part of the thir-

1, 2, 4. COLLECTION OF DEAN C. WORCESTER.

1. YOUNG NEGRITO WOMAN. 2. NEGRITOS MAKING FIRE BY RUBBING TWO PIECES OF BAMBOO TOGETHER. 3. GROUP OF NEGRITOS, PROVINCE OF ZAMBALES. 4. NEGRITO SHOWING FILED TEETH. 5. NEGRITOS IN THE FOREST, PROVINCE OF ISABELA.

teenth century by the Chinese geographer Chao Ju Kua, in his account of the Philippine trade which we have already mentioned. Pigafetta, we have seen, noticed them on the island of Panglao, and subsequent accounts of the Spaniards show that they were much in evidence in the sixteenth century on Negros, Panay, Luzón, the Calamianes Islands, and elsewhere. Contrary to what has frequently been represented, their numbers do not seem to be decreasing, or at least not as rapidly as has been supposed. There are at least 30,000 in the Philippines to-day, if we include mixed breeds in which the Negrito element predominates, and they are scattered over a great part of the archipelago from Cape Engaño on the north to Surigao and perhaps the Gulf of Dávao in Mindanao. In many places the type has been corrupted by commingling with refugees from the Filipino towns or from primitive Malayan tribes. Thus, on Mindoro, the Mangyan and the Negrito have very largely commingled. In the same Mangyan community I have seen persons of unquestionably pure Malayan descent and others who were very close to a pure Negrito type. Whether pure Negritos still exist on Mindoro is undecided, but they unquestionably did at one time, and a party of them are described by Navarrete, who was a curate on that island about 1650.

In 1899 Dr. A. B. Meyer, who has long studied the Negrito problem and who has seen this race in the Philippines and elsewhere, published a notable monograph, "The Distribution of the Negritos in the Philippines and Elsewhere," in which he sums up the information then extant upon the habitat of these little blacks. His result is stated in the following words:

> It may be regarded as proven with certainty that Negritos are found in Luzón, Alabat, Corregidor, Panay, Tablas, Cebú, on the northeast coast of Mindanao, and in Palauan. It is questionable whether they appear in Guimarás Island, in the south of Panay, Mindoro, and in the Calamianes.

Our own more recent researches, however, lead us to somewhat different conclusions. There are now no Negritos on Corregidor Island, although they live just across the narrow waters on the slopes of Mariveles. Diligent inquiry and research fail to locate Negritos at the present time on Cebú, but some may be still there, although the best informed natives of that island assert that there are none. Negritos, either of a perfectly pure type, or mixed with Malayan blood predominantly Negrito, are still to be found in the following provinces: Cagayán, Isabela, Ilocos Norte, Abra, Nueva Vizcaya, Tayabas, including the late comandancias of Príncipe and Infanta, Nueva Écija, Bulacán, Rizal, Pangasinán, Tárlac, Zambales, Pampanga, Bataán, Ambos Camarines, Albay (a very few domestics or slaves in the houses of Filipinos), Romblón (on the islands of Tablas and Sibuyán), Mindoro, Paragua, Cápiz, Antique, Negros Occidental, Negros Oriental, Suri-

gao, and Dávao. One curious fact of their distribution is that the Negritos are still to be found on several of the tiny islands where it would seem as though they could least of all find protection against their Malayan opponents. Thus there are almost certainly Negritos, though of mixed type, on all of the following little islands off the east coast of Tayabas and Ambos Camarines: Polillo, Alabat, Calaguas Islands, Jomálig, and Bantaranan. The name applied to the Negritos on these islets by the Tagálog of the mainland is Dumagat, which is said to mean "sea people." Also on the small forested island of Buracay, off the northwest cape of Panay, a community of Negritos is reported to be living. The Negritos are locally known by a variety of designations. The most common of these is *Aeta*, which becomes Ita, Eta, and Agta. In other places they are called Baluga, which in the Pampango language means "mixed blood;" Dumagat, as noted above; Abunlon in Zambales, and in the peninsula of Surigao they are invariably called Mamanuas, a word which may be translated "aborigines," and is compounded of the prefix *ma*, "people," "inhabitants," and *manua*, a variation of *banua*, "country," "land."

The next in order of treatment after the Negrito is the Igorot. This is the great stock which, as already explained, inhabits the Cordillera Central from the extreme north of Luzón south to the plains of Pangasinán and Nueva Écija. This designation, usually in the Spanish form *Igorrote*, has had long and wide use. It is used in its original or native form, *Igolot*, by Morga in 1609. In several Malayan languages this word means "people of the mountains." For example, among the Sámal Moros, *golot* means "mountain," "interior," etc. The prefix *I* has already been noted. Some writers have restricted the name Igorot to the tribes of Benguet and the southern ramifications of the Cordillera Central. Meyer and Shadenburg limit it to the peoples of Benguet and Lepanto, but in point of fact its use in northern Luzón is much wider. It is a meritable designation in point of etymology, and is so well known, both scientifically and among Filipino peoples, that I have adopted it as a general designation for this whole body of primitive Malayan tribes of northern Luzón who are of the same physical type, speak closely allied languages, and present the same grade of culture, and who belong almost unquestionably to one immigration period and to one ethnic source. I prefer also to use the word in its Filipino form and as it is pronounced regularly, Igorot, the same form for both the singular and the plural. Under the Igorot we may recognize various subgroup designations, such as Gaddang, Dadayag, or Mayoyao. These groups are not separated by tribal organization, as has been already explained, since tribal organization does not exist among these people, but they are divided solely by slight differences

1, 3, 4, 5. COLLECTION OF DEAN C. WORCESTER.

1. IGOROT GIRL, SHOWING METHOD OF STRETCHING HOLE IN LOBE OF EAR. 2. IGOROT WOMAN, HAIR BOUND UP WITH GRASS CHAPLET. 3. IGOROT BOY. 4. IGOROT FATHER AND DAUGHTER. 5. IGOROT WARRIOR IN HIS PRIME.

of dialect. Just how many of these separate dialects we should recognize has not been thoroughly worked out. The writer has personally studied and collected vocabularies of twelve. I believe this includes all except minor variations and one branch in the extreme north of the Cordillera, whom we have called Apayao. This last tribe is on both slopes of the Cordillera, but far more numerous on the Cagayán side. In the last years of the Spanish rule, there were founded among them the two politico-military comandancias of Apayao and Cabugáoan. They have a bad reputation for bloodthirstiness among both the Christianized Ilocano and the Cagayán. They have been scarcely visited since the end of the Spanish rule, and we have no information as to their present condition.

Coming south along the Cordillera we find on the midwaters of the Río Chico de Cagayán another interesting Igorot people who speak a dialect called the Dadayag. There are numerous well-built towns in the low foothills of the Cordillera occupied by these folks, and here there was formerly the Spanish comandancia and mission of Itaves. On one of the natural terraces overlooking the river there still stand several fine buildings of this now abandoned station. Farther south, and extending through Isabela, on the same foothills of the Cordillera, there are villages of the Gaddang, who, as above stated, have Christianized representatives in the province of Nueva Vizcaya.

Eastward, with a few settlements along the Cagayán river near Ilagan, as well as in the valley of the Calabugan, a tributary of the Río Grande, is an Igorot people, known as Kalinga. This is an *Ibanag* word, and means simply "enemy." Kalinga is frequently applied by the Christianized population of this valley to almost any group of the Igorot, and quite generally to the Apayao. The Kalinga east of Ilagan have been frequently denominated *Kalibugan*, from the river valley where they live, but this word is unknown as a tribal designation in that vicinity.

Ascending the Chico de Cagayán, one comes to the northernmost of the three great divides which break the mountain chain from west to east. Here years ago there existed a Spanish military road (*camino militar*), which led up from the province of Abra across the range at Balbalasan to Labuagan. It was the intention of the Spanish Government to complete this road down the Río Chico to the Cagayán valley, but the project was never carried out. Midway between Balbalasan and Labuagan, as well as in the Saltán valley, a little farther north in the mountains, there are groups of rancherías, of whose relation to other Igorot I do not feel very sure. Meyer and Shadenburg call them *Banaos* from one of their rancherías, *Banao*, but the whole tribe appears to speak with some variation the dialect known as *Itneg* or

Ecnig, the same language that is spoken in Abra itself by the Tinguián. These Banao people, who are called in Abra *alcados* (Spanish meaning "wild"), are, I think, the prototype of the present more civilized Tinguián.

Coming farther southward and ascending still higher into the mountains, we come to the most populous and in many ways the most remarkable region of the entire Igorot country, the district of Bontoc. Here we have some towns compactly built, containing, many of them, several thousand inhabitants each. The mountains, terraced for the formation of gardens and rice paddies, attain a maximum development and present a remarkable appearance, quite unexcelled by similar laborious effort in any part of the world. These Bontoc Igorot, who are, perhaps, the most famous of all the head-hunting people, speak of themselves as the *Ipukao*, a word which, in many of these languages, means "man" or "people." I have used it as the designation of the dialect spoken in this "culture area."

Southeastward over a dividing range is the district of Quiañgán. The strong garrisons which the Spaniards maintained here have never been replaced and this populous region has in the last few years experienced a veritable orgy of head-hunting. There are at least two fairly well recognized dialects here, the *Bunnayan* and *Silipan*, while farther east on the dividing line between Quiañgán and the province of Isabela are warlike Igorot, speaking *Mayoyao*. *Isanay* is spoken by the Igorot living in the mountains west of the civilized portion of Nueva Vizcaya.

On the western slope of the Cordillera, we have in Lepanto several dialects differing somewhat from one another and approximating those of the surrounding tribes. In the north, the Igorot is very like the Itneg of the Tinguián of Abra. In the eastern rancherías it approaches the Ipukao of Bontoc, while in the southern rancherías it is the *Kankanay* dialect which is spoken in northern Benguet and Amburayan. In southern Benguet and east of the Agno valley in the old comandancia of Cayapa is spoken *Nabiloi*.

Numerous other tribal designations, which have arisen out of the uncoordinated studies of many observers should be, in my opinion, rejected. Many of them are derived from rancherías or place names; others, like the term *Burik*, meaning "tattoo," come from some peculiarity of the people and are applied to Igorot now in this place and now in that. For the purpose of ethnologic classification, all this people represent one group, and to them I would add even the more civilized and developed Tinguián.

The Tinguián constitute about one-half the population of the province of Abra. They live in settled communities, are peaceful and industrious, practice weaving, as do also many tribes of the Igorot, and are conspicuous in appearance because of their brass armlets and leglets, and

COLLECTION OF DEAN C. WORCESTER.

1. NATIVE WOMAN WITH NEGRITO BLOOD (REMONTADO). 2. YOUNG MAN (REMONTADO). 3. GIRL (REMONTADO). 4. NATIVE MAN WITH NEGRITO BLOOD (REMONTADO). 5. GIRL (GADDÁN). 6. WOMAN (GADDÁN).

the neat and tasteful dressing of the hair among the women. They present under these conditions a somewhat different appearance from the ordinary Igorot. The face and body seem plumper and, as suggested above, the person is more carefully attended to, but I believe the physical type and ethnic origin are the same. The word Tinguián is derived from *tingues*, meaning "mountain," a Malayan word, archaic and almost unused now in Tagálog, and the suffix *an*. The word was employed around Laguna de Bay three hundred years ago to designate the people in the mountains, and Chirino also speaks of the mountain people of Bohol as Tinguián, but in these places the use of the word has disappeared. For nearly two centuries it has been used to mean these pagan people of Abra. Tinguián and Itneg are the names also applied to a small group of Igorot living rather isolated from the rest of their stock in the mountains near Cuyapó, Nueva Écija.

About the headwaters of the Río Grande de Cagayán in the province of Isabela, in the densely forested mountains of the Caraballos Sur and thence southeastward through the mountainous portions of Nueva Écija and Príncipe, there is a very curious tribe of head hunters known among the people of Nueva Vizcaya as Ibilao, but sometimes designated as Ilongot. The physical type is quite different from that of the Igorot of the Cordillera Central. The thin, nervous faces of the men bear a scanty beard, the hair is wavy and worn about the shoulders. These people represent a very primitive Malayan stock, but I can not attempt to settle at the present time their derivation. They are few in number; their social organization is so limited and faulty that each little community preys upon the other rancherías of the same tribe in its hunt for human heads. Though few in number they are feared by the people of Nueva Écija, and the northeast portion of this province is almost uninhabited by Christian population because of the raids of these head hunters.

Coming southward into the mountainous country north of Rizal province, we have a few nomadic Malayan families, usually living in association with Negritos and frequently mixed with Negrito blood, who were known to the Spaniards as *Remontados*, *Vagos*, *Nomadas*, etc. They seem to represent the outlaw element from the Christian towns. I saw quite a number of these at one time, together with Negritos with whom they lived, who were brought into the town of Montalbán by the insurgent general, Gerónimo. They were a curious band of mixed races extending from the extremes of pure Malay to almost pure Negrito. They were thorough savages, almost naked, and with no means of livelihood except the chase and wild roots. This wild type, which, on its Malayan side, is probably related quite closely to the present Christian population, occurs in many spots and islands of the archipelago. In Ambos Camarines, on Mt. Isarog, there are a good

many of them, and they are there known as "Igorrotes." These people of Isarog were visited by Jägor, the German traveler, in 1869. In Negros and Panay, such interior people are usually called *Monteses*, although a variety of designations have been applied to them—*Mundos*, and the names which in recent years have come to stand for both insurrection and religious heresy, *Pulijanes* and *Babylanes*. In these cases, they seem to be a pure Visayan element, who escaped conversion and have remained in the interior of these islands from the time of the Spanish conquest until this day. I have adopted the term *Bukidnon* as a general term for them all, whether found on Luzón or in islands of the Visayan group. This is a native word which, with some variations, is found in many of the Filipino languages. It means "people of the *bukid*," or mountain forests, and may be compared with the Tagálog *Tagabuquit* and the Bornean term *Orang Buquit*.

On Mindoro we have another type, very primitive and very low in culture, mixed in some instances with Negrito, which is known as the Mangyan. The word has a great variety of spellings, and I retain the one which is nearest to the local pronunciation. There are settlements of these wild folk in the northern part of Mindoro on the Bacó river and back of Puerto Galera, but they seem to be most numerous in the south in the vicinity of Bulalácao. As stated above, in many places they contain a considerable mixture of Negrito. Their language, however, if I may judge from a small vocabulary collected by me from a settlement on one of the spurs of Mt. Halcón, is very closely allied to the languages of the Christianized Filipinos, and they certainly have practiced the art of writing in one of those curious syllabic scripts which were in the possession of most of the tribes of the Filipinos before the Spaniards' coming.

Of the derivation of the name Mangyan, Dr. Pardo de Tavera says:

> In Tagálog, Bícol, and Visaya, Manguian signifies "savage," "mountaineer," "pagan," "negro." It may be that the use of this word is applicable to a great number of Filipinos, but nevertheless it has been applied only to certain inhabitants of Mindoro. Even in primitive times without doubt this name was given to those of that island who bear it to-day, but its employment in three Filipino languages shows that the radical *ngian* had in all these languages a sense to-day forgotten. In Pampango this ending still exists and signifies "ancient," from which we can deduce that the name was applied to men considered to be the ancient inhabitants, and that these men were pushed back into the interior by the modern invaders, in whose language they were called the "ancients." (*Etimología de los Nombres de Razas de Filipinas, Manila, 1901.*)

The Tagbanúa, of Busuañga, another primitive Malayan people, who are found in still larger numbers on the island of Paragua, have already been referred to. They are numerous in the vicinity of Puerto Princesa, where a syllabic form of writing is still in use among them.

1, 2, 3. TAGBANŪAS, COMANDANCIA OF PARAGUA SUR.

COLLECTION OF DEAN C. WORCESTER.

Farther north in Paragua we have a similar Malayan strain considerably crossed with Negrito, which is known as the *Battak*. The name Tagbanúa is composed of the Malay-Polynesian word *banua* (*manua*, *fanua*, etc.) and the prefix *taga;* the combined word means "people of the country," "aborigines."

This brings us to the pagan peoples of Mindanao. In regard to these there has been much diversity of opinion, and the problem can not yet be settled satisfactorily. My own opinion is that we have here, exclusive of the Negritos of Surigao, the Mamanua, only Malayan tribes, comparable to the same peoples we have seen farther north in the Philippines. The Christian population in northern Mindanao is confined closely to the north and east coasts. Back in the interior from these towns there is, both in the province of Misamis and in that of Surigao, a considerable pagan population living in villages, but frequently changing their homes. They are known in the west as Monteses or Montes, and on the watershed of the Agusan river as Manobo. The first of these terms is simply the Spanish word, meaning "mountain people," which has been applied so indiscriminately that I believe we should discard it. *Manobo* is a native word which, in the Bagobo language on the Gulf of Dávao, means "man." It is so given in Padre Gisbert's vocabulary and also in a special vocabulary taken for the ethnological survey. Blumentritt, however, suggests—and I believe with merit—that Manobo here in northern Mindanao is a derivation of Manubo, which is itself derived from *Masuba*, meaning "people of the river." This term Manobo should be retained for all of this great group living along the affluents and tributary streams of the river Agusan, and the term might, with propriety, I believe, be extended to the Montes farther west and back of Misamis. If there are objections to applying the term Manobo to these pagans of Misamis, I would suggest the application of our general term Bukidnon.

On the western coast of Mindanao, living around the Bay of Sibuguey and the Bay of Dumanquilas, and also extending southward some distance through the mountains into the peninsula of Zamboanga, are the Subanon. This is the only pagan people of Mindanao among which I have spent sufficient time to judge of the type, the language, and culture. They appear to be a representative type of the primitive Malayan race, widely distributed through the Malay archipelago, who have been forced back from the sea into the interior by the arrival and persecutions of the seafaring Malays, both previous and subsequent to the latter's conversion to Mohammedanism. The type is slender, a little below medium height, with straight hair; nervous faces, both restless and weak; noses rather flat, but only moderately broad; full lips and receding chin. This is, in fact, the same type which we find

so widely distributed in the Philippines, and which, I fancy, is nearly identical with that of the interior tribes of Borneo, the Célebes, and perhaps Sumatra. As a type it differs very little from the Ibilao on the north or the Mohammedan Yakan on the island of Basilan, which will be noted later.

The word *Subanon* is derived from the very common Malayan word *suba*, meaning "river," and the suffix "*non*," meaning "people of." It is a good tribal designation, is in general use, and has been recorded a long while. The Jesuit historian, Combes, in his *Historia de Mindanao y Joló*, first published in 1667, employs the name frequently, and, as has been already suggested, it probably reached the ears of Pigafetta at the time of the visit of Magellan's expedition to the southern coast of Mindanao.

Going eastward in Mindanao and passing by the central lake region, which is inhabited entirely by Lanao Moros, we come to other tribes, which, so far as I have seen, differ in no essential from the Subanon, which we have just described. Around the headwaters of the Río Grande de Mindanao they are called Manobo. South of the Río Grande they are called Tiruray, Bilan, Manobo, and other names. The reason for the use of these different terms is not satisfactorily explained. There are doubtless changes of dialect between them comparable to the changes we find among the Igorot in northern Luzón, but I believe it is hardly justifiable to break up into separate tribes or divisions a population so thoroughly homogeneous as these pagans of Mindanao appear to be. Tiruray, according to Dr. Pardo de Tavera, is derived from *atew rooter*, people living above—that is, up the river. Bilan, as Blumentritt suggests, may have been derived from Bulúan, the name of the marshy lake in central Mindanao which borders their habitat.

Around the shore of the Gulf of Dávao we find principally two peoples, to whom, I believe, most of the numerous tribes reported in that region may be referred. These are the *Bagobo*, on the west side of the gulf, with the closely related *Tagacaolo* south of them, and the *Mandaya*, who live north of the Gulf of Dávao, eastward to the Pacific coast and northward into Surigao. Among some of these tribes there have been reported a higher stature and a finer physique, and this has called forth the theories of Montano and other writers, and has led to their being designated *Indonesian*. In the usual explanation of this term this would mean that they are connected with people of mixed Caucasian blood, who were in primitive times distributed across the Malay archipelago, and who find their purest living type in the Polynesians. Now this theory, as applied to these tribes of eastern Mindanao, appears to me to rest on very slender evidence. The perceptible gain

BAGOBOS, ISLAND OF MINDANAO.

in height among the peoples does not seem to be accompanied by the other distinguishing marks of the Caucasian or the Polynesian. For the present I prefer to regard these with other pagan tribes of the Philippines as Malayan. All these people of Mindanao, while not essentially warlike, have the beliefs and ceremonial customs that incite to cruel and bloody acts. They take not only the head of a vanquished enemy, but the hands and heart as well, as do the Ibilao of Luzón. They practice, and have done so several times within recent months, human sacrifice, offering the life of a slave to their deity, Diwata. This is a Sanskrit-Malay name widely used by non-Mohammedan tribes in the Malay archipelago. Yet they are by no means mere savages. They raise on their forest clearings maize, mountain rice, *taro*, and a very fine quality of hemp. Practically all the hemp that passes out through the ports of Mindanao is raised and cleaned by the pagan tribes. This hemp fiber they dye in very curious and ornamental patterns, and weave into beautiful and striking garments. Their numbers are kept down by their unsettled mode of life, and their condition has for centuries been depressed by the rule and exactions of the Moros.

We now come last of all to the Mohammedan Malays. The entrance and spread of Islamism in the southern islands of the Philippines have already been discussed in the preceding part of this report. The faith early secured a firm foothold on the island of Joló and among the Maguindanao Moros in the valley of the Río Grande de Mindanao. These two peoples have always led among the Mohammedan tribes of these islands. Formerly the Sultan of Sulu and the Sultan of Maguindanao divided between them the suzerainty of the Sulu Islands and the southern coast of Mindanao.

The term "Moro," by which all these tribes are generally known, was applied to them by the Spaniards and means precisely what the term "Moor" meant to the Englishman three hundred years ago—that is, Mohammedan, and nothing more. While a valuable designation to signify all of these tribes taken together, it is not an ethnologic term at all. The Moros of Mindanao and Sulu belong to several different tribes, which we will proceed to describe.

Sulu is the native designation both for the island and the people, and Joló is a Spanish corruption of the same word. Sulu is spelled in several ways—Suul, Sug, and Sulug, probably the latter is more frequent and most nearly correct, but I prefer to leave the word "Sulu," the form which has had long standing. These people appear to have been the lords of the island of Joló previous to their Mohammedan conversion, and this dominant position they have never lost. Not only does the Sultan of Sulu still claim suzerainty over the Sámal

and Yakan tribes of the archipelago, but most of the petty datos and panglimas in the towns of the Sámal Moros themselves are of Joló birth or descent. The bulk of the Sulu Moros is on the island of Joló and the islands immediately south as far as Siassi and Pandami.

All around these islands are villages, some of them very populous, inhabited by Sámal. The word "Sámal" or "Sama" means in their own language "companion," and the people who bear this name are a very important element in the population of the Sulu archipelago. They are apparently descendants of the Sámal Laut of Johore and the Strait of Malakka, but they have left life in their boats for the more settled life of the beach, gaining thereby in material condition and in the depth of their Mohammedan profession. They are no longer nomads drifting with the shifting of the monsoons, sheltering their frail boats in one little bay and sailing for another inlet or sea on the following day or moon. Their faith and their change of life have made them feel quite strongly the difference between themselves and their allies, the Sámal Laut or "men of the sea" who are very imperfect followers of Islam. These Sámal have many large villages in the southern Sulu archipelago, but they have selected for the site of these settlements not the high, forested, volcanic isles of the group, but low coral reefs with wide sandy beaches, sometimes very small, and almost always without springs of water. It is a strange sight to see a village of these people, the houses all built over the sea facing the narrow coral reef and opposite the houses on the beach a fringe of coconut trees amid which lie the tombs of their dead. Sometimes, as in the case of the populous island of South Ubián, there may be no fresh water nearer their town than 15 or 20 miles. They depend upon a supply brought in large jars in their little boats and upon the milk of the green coconut. On Lamenusa, near Siassi, on South Ubián and its adjacent islands, there are very large towns of these Sámal. The islands of Tandubás, Secubun, Mantabúan, Banaran, Manoke Manka, and Simonor also contain villages of considerable size. There are several little settlements on the islets at the southwestern end of Tawi Tawi, near Boñgao, but on the island of Tawi Tawi itself, which is volcanic, high and very thickly forested, there is practically not one Moro town except the old piratical resort of Balimbín. These people are Sámal and famous boat builders. There are other small villages farther south on the little coral reefs facing the west side of Sibutu, which are a part of the population acquired by the United States in the supplementary treaty with Spain after the Treaty of Paris. West of Tawi Tawi the population of the islands is very sparse. There are no inhabitants on the Pearl bank or Tagao Islands, but there are small settlements on Cap Island, North Ubián, and Pañgutárang. These

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1, 5. COLLECTION OF DEAN C. WORCESTER.

1. MAGUINDANAO MORO—WIFE OF CHIEF ALI. 2. MORO WOMEN OF UPPER CLASS, ZAMBOANGA. 3. DATO AND BRIDE. 4. MOROS OF LAKE LANAO, MINDANAO. 5. JOLÓ MORO, ADULT MALE.

islands are all unattractive, with repulsive vegetation and a desolate, uninviting aspect. While, as stated, this population is almost entirely Sámal, their datos are Sulu, descended from the royal families of Joló.

But the real locus of the Sámal people, where formerly they existed in greatest numbers and where the "pure Sámal" dialect was spoken, was the group of islands between Basilan and Joló, still known as the "*Islas Samales*," especially Tonguil and Balanguingui. These islands were the very latest haunts of piracy to be broken up by the Spaniards. Up to 1849 fleets of these Sámal came each year up the west coast of Mindanao, spent months in the Visayan Islands, burning towns and taking loot and captives, and then proceeded leisurely down the east coast of Mindanao with the northeast monsoon back to their homes. Not until the introduction of gunboats during the administration of Claveria was Spain able to attack and defeat these pirates in their own lairs. Two notable expeditions accomplished this object, and the population was not merely defeated, but was largely driven from these islands, scattering up and down the Zamboangan peninsula, while a considerable number of persons of rank were exiled by the Spanish Government to the province of Isabela, Luzón, where their descendants were still living on haciendas near Ilagan when that province was visited in 1900 by the Philippine Commission.

In addition to these settled Sámal, the Sámal Laut or "Bajau" are found in a great number of places throughout the Sulu archipelago and the southern coast of Mindanao. Their manner of living has already been described. They are found, a family to a boat, in little fleets of half a dozen sail, subsisting almost exclusively upon a diet derived from the sea. Their traffic is confined wholly to the products of these waters. Expert divers, they bring up a few pearl shells, an occasional catch of *tripang* or *bêche de mer*, a little edible seaweed, or a few shark fins, which they exchange at the Chinese trading posts for the tapioca of the land Moros and the cheap cloths which form their garments. They seem to have no political organization of their own, but obey and pay tribute to the dato or petty chieftain in whose waters they have for the moment found shelter. There are some famous resorts of these boats, one of them being Taluksangay on the east coast of Zamboanga peninsula, others around Tonguil where the true Sámal have almost disappeared, another on the island of Joló, and a great many boats find anchorages and fishing grounds in the vicinity of Siassi.

On the island of Basilan we find a very different type of Moro. These are the Yakan, who are a primitive Malayan tribe of the same type and general culture as the Subanon of the Mindanao mainland, and who, some generations ago, were proselyted to Mohammedanism

and are fanatical adherents of this faith. They live scattered over the island cultivating a little maize, rice, and tapioca, bringing out some jungle product, but living as a whole miserably and in poverty. They make a very characteristic and interesting blowgun or "*sumpitan*" which, in place of the bow and arrow, seems to be the characteristic projectile weapon of the primitive Malayan. Some of these Yakan have migrated to the peninsula of Zamboanga and the islands adjacent to this coast.

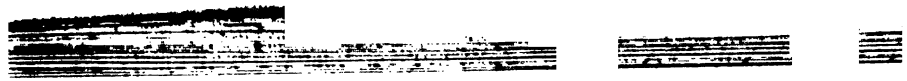
In small villages along the coast of Zamboanga, living and mingling with other Moro settlers, are people called *Kalibugan*, who appear to be Subanon, converted in recent times to Mohammedanism.

Proceeding northward along the coast of Zamboanga, we come to two deep indentations—Sibuguey bay and Dumanquilas bay. Both of these regions were colonized some generations ago by Moros of Maguindanao, coming from the regions around Cottabato. Their numbers—or at least the importance of these settlements—have now greatly diminished, but sixty years ago they appeared to the Spaniards to be formidable and important, and the chieftains, who were of direct royal descent, received from the Spaniards the title of "Princes of Sibuguey."

In the deep gulf on the south coast of Mindanao between Punta Flechas and the present army post of Malabang live the Moros known as Ilano. They are now very few in number, but in times past bore a great reputation for piracy. Their name means "people of the *lanao*" or "lake" and suggests, what is probable, that they are closely connected with the Malanao or Moros dwelling in the valley of the interior lake of Mindanao. These latter are comparatively numerous and were never subdued by the Spaniards, but have been severely whipped by the American Army in the last two years.

Last of the Mohammedan tribes we come to the Maguindanao, the tribe which has given its name to the island itself. The word means "people who come from the lake," and has long been used to designate the warlike Mohammedan tribes of the Río Grande. These were almost the first Moros with whom the Spaniards came in contact. Various attempts were made by the Spanish Government, even in its earliest years, to establish colonies near the mouth of this river, but they were repulsed and these Moros were not thoroughly defeated until recent years when General Weyler was military governor of Mindanao. Since that time their importance has been steadily declining. To-day the Sultan of Mindanao is an exile from the Río Grande, with his home at Dumanquilas bay. His prestige is gone, he is poor to the point of destitution, and he will never regain the position occupied by his predecessors. Such seems to be the fate of the sultanate among these tribes

1. ZAMBOANGA, MINDANAO, FILIPINO SETTLEMENT, RESIDENCE OF MILITARY GOVERNOR. 2. MORO HOUSES AT SIASSI, TAPUL GROUP. 3. MORO SEACOAST VILLAGE. 4. MORO VILLAGE, ZAMBOANGA, ADJOINING AND WEST OF FILIPINO SETTLEMENT.



whenever the native power meets formidable opposition and falls, as it invariably must, into the hands of a weak and dissipated prince. The present sultanate of Sulu is rapidly approaching the state of weakness and decay represented by the sultanate of Mindanao, and, unless supported by the United States Government, will not be able much longer to command the obedience of the Moros of the Sulu archipelago. The days of the Moro power are past. For three centuries they defied the European and carried war with impunity into his territory. For generation after generation the Spaniard stood purely on the defensive, and sought by treaty and subsidy to win where he could not conquer.

There must have been some barbaric splendor about these old pirate states when at the height of their power and daring. To see how they could impress Europeans one should read the notable volume of Captain Forrest, "A Voyage to New Guinea." Captain Forrest visited, and formed an alliance with, the Sultan of Maguindanao in 1776. There is something almost melancholy about their decadence. Theirs were the only political achievements of any consequence ever made by peoples of the Philippines, but their passing none the less marks a gain for civilization.

From the many references already made, it is apparent that much has been written about the people of the Philippines, but the principal attempts at classifying them by peoples or tribes are, first, that of Prof. Ferdinand Blumentritt, published in the *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 1890, and translated and republished in the report of the Smithsonian Institution for 1899, and, second, the work of the Jesuit Order, on which is based the classification published in the Atlas of the Philippines, prepared by Father José Algué, and issued by the United States Coast and Geodetic Survey in 1899, and the statements in the first report of the Philippine Commission.

Both these lists agree in recognizing a large number of tribes, especially in the least-known regions, namely, the high mountains of northern Luzón, and the island of Mindanao.

Since the date of these publications, extensive investigations have been carried on by the Philippine Bureau of Ethnology, especially in the two regions just named. One result of these investigations has been to reduce greatly the number of different tribes, since close acquaintance with these people reduced the differences among them. The 82 tribes of Blumentritt and the 67 tribes of the Jesuits are thus reduced to 24, including the 8 tribes of Christian people.

The enumerators of the census furnish returns under 116 designations, counting all the variances in spelling and form of name, and all descriptive terms, such as "infieles," "no cristianos," but if all variances in spelling are omitted there remain 83 designations, to which

should be added the names of the 8 civilized tribes in order to make the list comparable with those of Blumentritt and the Jesuit fathers.

Comparing the census list of designations thus modified, with the two others, there are found numerous cases of omissions on both sides. The enumerators' list contains a number of names not found upon either of the others, and conversely; each of them contains names not found on the census list.

Examination in detail of the names found in the lists of Blumentritt and the Jesuit fathers, and not found in the census list, shows that they are in all cases included under more general designations; thus, Cuyonos and Calamianes are included in the Visayans, others under the name Igorot; others are Cagayanes, and still others Tagbanúas, so that it appears that all the ground has been covered, and no group of people mentioned as a tribe by these two authorities has been omitted from enumeration.

The following list shows the various local names by which the enumerators have designated the wild tribes in their respective districts, to which have been added a few other names not used by enumerators, but employed elsewhere.

The first or left-hand column gives the local name used by the enumerators, and the province in which enumerated; the middle column, the name of the tribe to which the subtribe or local branch thus designated is supposed to belong, and the final or third column contains notes explaining their relation and, as far as possible, the meaning and origin of the local names used by the enumerators.

The list indicates but 16 tribes, which have 111 local names, as shown in the census schedules and in other parts of this report.

Classification of non-Christian tribes.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Aburlin (Tárlac)	Negrito	These Aburlin enumerated in the town of Moriones are Negritos. The name is purely local, and I have never encountered it before. It may be allied in derivation to the name "Abunlon" for the mixed Negrito-Malayan of Zambales.
Aetas (Isabela, Pampanga, Tayabas, Bataán, Bulacán, Antique).	do	Aeta is the oldest known name for the Negrito. It was in use long before the Spanish conquest and appears in Chinese writings of the thirteenth century as "Haitan." Various derivations have been proposed for it, but it probably is derived from the Tagálog "itim," black (Malay, "hitam"). The word Aeta has many modified forms, such as Ita, Eta, Aita, Agtas, etc.

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Aeta Aburlin (Zambales)	Negrito	Usually "Abunlon," a name locally applied to the mixed Negrito-Malayan savages of Zambales.
Aeta Buquit (Tárlac)	do	"Aeta Buquit" means simply "Forest Aeta."
Aeta Mitas (Antique)	do	Misspelling for "Aeta Mixtas," meaning "mixed Aeta."
Agtá (Ambos Camarines)	do	Variation of Aeta.
Agtas (Isabela)	do	Do
Aitas (Negros Oriental)	do	Do.
Alamit (Nueva Vizcaya)	Igorot	Igorot population living along the Alamit river in Quiañgán district. They belong to the dialect group "Silipan."
Apayaos	do	The people living in the district of Ayangan, in the comandancia of Quiañgán.
Ata and Ata Ang (Dávao)	Ata.	
Atid (Ambos Camarines)	Negrito	The word is either another local variation of Aeta, or comes from "Ati," which is explained in Noceda's and Sanlucar's *Vocabulario de la lengua Tagala* as a hail used by the Aetas when calling one another.
Ayangan (Nueva Vizcaya)	Igorot	They belong to the dialect group Bunnayan.
Bagobos (Dávao, Cottabato; very few in latter region).	Bagobo	Primitive Malayan tribe, pagan, with some late Christian converts, living on the west coast of Dávao and interior.
Balugas (Nueva Écija, Tayabas, Tárlac).	Negrito	"Baluga," in the Pampango language, means half-breed or mixed blood. It has quite a wide use to indicate Negrito-Malayan roving savages.
Banao	Igorot.	
Bañgon (Mindoro)	Mangyan	This name has been recorded in a slightly different form, Bangat, for the Mangyan about Bulalácao and Pinamalayan. It is mentioned by Blumentritt. I can not discover its derivation. Bañgon in Tagálog means "to rise up."
Banuaon (Surigao)	Manobo	This word is locally used for Manobo both in Surigao and Butúan. It is derived from "*banua*," meaning land, country, and the Visayan suffix *non*, meaning "a native of," "inhabitant of." The word may be translated "people of the country, aborigines."
Batac	Batak	A Malayan race in northern Paragua with considerable Negrito blood, but probably with Malayan element predominant.
Batañganes (Mindoro)	Mangyan.	
Bilanes (Dávao)	Bilan	Generally accepted name. Blumentritt suggests their name is derived from Bulúan, the name of the marshy lake on the boundaries of their habitat, "They must then at first have been called Tagabuluan" (compare Tagabelias).
Bilans (Cottabato)	do	(See above.)
Bunnayan (Nueva Vizcaya)	Igorot	Bunnayan is the name of the dialect spoken by the powerful towns in the center of the comandancia of Quiañgán.

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Buquidnones (Negros Oriental).	Bukidnon .	People of the "Buquid" or mountain forests. Compare with the Tagálog "Tagabuquit" and the Bornean "Orang Buquit." These peoples are the primitive Visayan who escaped conversion when the islands were Christianized. They are known under a variety of names. "Remontados," or people who have taken to the mountains, "Monteses" mountain folk, "Babylanes" on Panay, "Pulijanes" in Negros, etc.
Buquit (Mindoro).....	Mangyan ..	Abbreviated from Tagabuquit or Buquitnon. In Tagálog, "Buquit" means the rice fields adjoining towns.
Calaganes (Dávao)	Bagobo.	
Calingas (Isabela)	Igorot.....	Spelled also *Kalinga*. The word in Ibánag and several northern dialects means "enemy," and has been applied by the Christianized population of the Cagayán river to several groups of head-hunting Igorot. Its use as a dialect name should be confined to the Igorot in the vicinity of Ilagan and perhaps also to those of the comandancia of Apayaos, province of Cagayán.
Catalañges (Isabela).....	.....do	This word is not used in the census enumeration of Isabela; the term has wide currency and appears on Spanish maps and in various writings to designate the Igorot people living in the mountains east of Ilagan. There is, however, no such tribal name. The word is not current as the name of a people nor understood in Isabela province. Catalañgan is the name of the river flowing into the Cagayán, along which many of these people dwell. They speak the same dialect as the Igorot, known as "Kalinga."
Catbaganes (Tayabas).....	Bukidnon .	This name is generally used in Tayabas to designate the pagan-Malayan population in the mountains of that province. They are primitive, unconverted Tagálog or Bícol, and are the same wild element known in Ambos Camarines as the "Igorrotes" or "Cimarrones," of Mt. Isarog. I can not discover the derivation of the word "Catabagan." It is also spelled "Catabangan."
Cristiana Negrita (Sorsogón).	Negrito....	These Negritos, according to letters received by this bureau from Gov. J. T. Livingston, are domestics (actually slaves) in the houses of the Bícol inhabitants. They may be the remnants of aboriginal population which occupied this region previous to the arrival of the Malayan tribes, or they may have passed into Sorsogón by purchase or otherwise from Albay, where they are much more numerous and still maintain separate communities.

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Dadayag	Igorot.	
Dumagat	Negrito.	
Ecnig (Lepanto-Bontoc)	Igorot	Ecnig is a variation of Itneg, the dialect spoken by the Tinguianes and by Igorot, of allied blood (northern Bontoc), in the Saltán valley.
Epocao, Ipucao (Lepanto-Bontoc.	do	Epocao is misspelling of Ipokao, a word in nearly all Igorot vocabularies meaning "people." It has many variants—"Ifugao," "Ipukao," etc.
Eta	Negrito.	
Gaddanes, Gaddang (Isabela.)	Igorot	A branch of the Igorot occupying western Isabela and speaking the dialect Gaddán. They are commonly known by this name. A branch of their tribe occupying Nueva Vizcaya was Christianized in the latter part of the eighteenth century and occupies the northern towns of the province.
Gibabaun (Dávao)	Mandaya.	
Guanga (Dávao)	Bagobo.	
Ibilao (Isabela, Nueva Écija).	Ilongot	Ibilao, or Ibilaw, is the name under which the Ilongot, peculiar head-hunting savages of the Caraballos Sur and mountains of Nueva Écija and Príncipe, are designated by the Isanay municipalities of southern Nueva Vizcaya. The etymology of this word is unknown. The Ilongot have also been called Italones, meaning, in Gaddán language, "people of the mountains."
Ifugao (Isabela)	Igorot	(See comment on Epocao.)
Igorrotes (Ilocos Norte, Pangasinán, La Unión).	do	This word in Spanish form, "Igorrote," has had long and wide use. It is used in its original form, "Igolot," by Morga, 1609. It means in several Malayan languages "people of the mountains." Some writers have tried to restrict its use to the tribes of Benguet and the southern ramification of the Cordillera Central. Meyer and Schadenberg limit it to Benguet and Lepanto, but in point of fact its use in northern Luzón is much wider. It is a meritable designation in point of etymology, and is so well known, both scientifically and among Filipino peoples themselves, that I have adopted it as a general designation for the whole body of primitive Malayan tribes of northern Luzón who are of the same physical type, speak closely allied languages, and present the same grade of culture. I use it to include several subgroup names, such as Gaddang, Dadayag, Mayoyao, etc., whose members are not separated by tribal organization, since such does not exist, but simply by slight differences of dialect. I prefer to use the word in its Filipino form, and as it is pronounced locally "Igorot;" same form for both singular and plural.

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Illano (Zamboanga)	Moro	Variant, Illanum. The word means "people of the lake." It is used to designate a Mohammedanized or Moro tribe living on the south coast of Mindanao, from Punta Flechas to Polloc. I have added to the various titles of the Mohammedanized tribes, the popular term "Moro."
Ilongotes (Isabela, Nueva Vizcaya, Tayabas, i. e. old Príncipe).	Ilongot	(See note on Ibilao.) I prefer Ilongot, the Filipino pronunciation, both singular and plural, in place of the Spanish form "Ilongotes."
Infieles (Cápiz)	Bukidnon	Infieles of Panay are unconverted remnants of the original Visayan population.
Infieles (Ilocos Sur, Pangasinán).	Igorot	The Spanish classified the inhabitants of the Philippines ecclesiastically, into *Cristianos* (Christians), *Infieles* (pagans), and *Moros* (Mohammedans). The word *Infieles* should be dropped.
Ipukao (Lepanto-Bontoc)	Igorot.	
Isanay (Nueva Vizcaya)	do	Variant of Isinay.
Isinac (Nueva Vizcaya)	do	Do.
Isinay (Nueva Vizcaya)	do	Isinay is the language spoken by the Igorot of the hills in western Nueva Vizcaya, and by a part of the population of the towns of Aritao, Dúpax, and Bambang, who are of Igorot origin, but whose ancestors were converted in the latter half of the eighteenth century.
Ita	Negrito	(See Aetas.)
Itneg	Igorot	(See Ecnig.)
Joloano (Zamboanga)	Moro	Joló is a corruption of Sulu. I have preferred the correct form "Sulu" for the people, leaving Joló as the name solely of the island and town. The archipelago, however, is commonly and preferably called Sulu archipelago.
Kalibugan (Isabela)	Igorot.	
Kalibugan (Zamboanga)	Moro	Kalibugan is the name locally applied to the Mohammedan proselytes from the pagan Subanon. In some cases they are mixing with Sámal Moros and Yakan Moros, but they are still predominantly Subanon in blood and language.
Kalingas (Cagayán)	Igorot	In using this word to designate the Kalinga subgroup of the Igorot I prefer to use the native form "Kalinga" for both singular and plural.
Mangian (Mindoro)	Mangyan	Of the derivation of this word Dr. Pardo de Tavera says: "In Tagálog, Bícol, and Visaya, *manguian* signifies 'savage,' 'mountaineer,' 'pagan negroes.' It may be that the use of this word is applicable to a great number of Filipinos, but nevertheless it has been applied only to certain inhabitants of Mindoro. In primitive times, without doubt, this name was even then given to those of that island who to-day bear it, but its employment in three Filipino languages

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Mangian—Continued.	Mangyan—Cont'd.	shows that the radical *ngian* had in all these languages a sense to-day forgotten. In Pampango this radical ending still exists and signifies 'ancient,' from which we can deduce that the name was applied to men considered to be the ancient inhabitants, and that these men were pushed back into the interior by the modern invaders in whose languages they are called the 'ancients.'" (*Etimología de los Nombres de Razas de Filipinas*, Manila, 1901.)
Manguanga (Dávao)	Mandaya.	
Manguianes (Mindoro)	Mangyan	Variant of Mangyan, the form I prefer, as it more exactly represents the local pronunciation.
Maguindanao (Cottabato, Zamboanga, Dávao).	Moro	The word means "people who come from the lake" (danao, lanao), and has long been used to designate the warlike Mohammedan tribes of the Río Grande. These tribes were almost the first Moros with whom the Spaniards came in contact, and their name passed to the island itself. Those of Zamboanga (Situguey and Dumanquilas bays) and of Dávao are emigrants from the Río Grande.
Malanao (Laguna de Lanao)	do	Derived from the very common prefix *ma*, meaning "people of," and *lanao*, "lake." This term has long been in use to distinguish the Moros living on the watershed of Lake Lanao.
Mamanuas (Surigao)	Negrito	Mamanua is derived from prefix *ma* and *manua*, a common variant of the word *banua* (Polynesian *fanua*) meaning "land," "country." We may translate the word "aborigines."
Mandayas (Cottabato, Dávao).	Mandaya	Derivation not known.
Manidi (Ambos Camarines)	Negrito	Derivation not known.
Manobos (Cottabato, Surigao, Dávao).	Manobo	This word in Bagobo dialect means "man." (Pardo de Tavera.)
Manovos (Surigao)	do	Misspelling of Manobo.
Mansaca (Dávao)	Mandaya.	
Mayoyao	Igorot.	
Montañes (Iloílo)	Bukidnon.	Spanish designation, meaning "mountain people." I prefer to drop it altogether and use the Filipino term, Bukidnon, meaning the same thing.
Montes (Misamis, Iloílo)	Bukidnon.	Spanish ("wild," or "mountain bred") variant of Montañes.
Montescos (Antique)	do	Do.
Monteses Negros (Negros Occidental).	Negrito	Variant of the old designation, "Negrito del monte."
Moro Filipinos (Iligan)	do	(See Malanao.)
Moros (Malabang, Paragua Sur, Cottabato, Joló, Dapitan, Zamboanga, Misamis).	Moro	I always use this word with the tribe name attached, as "Sulu Moros," "Yakan Moros," etc. The word is Spanish and means "Mohammedan," or "Moor," as this latter word was currently used in English three centuries ago. It is not a

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Moros—Continued.	Moro—Con.	proper ethnologic designation, but is a convenient name for all the different peoples and tribes of Mindanao and the Sulu archipelago who profess the religion of Islam. Its use in this sense is very old and will doubtless survive.
Moros Joloanos (Siassi)	do	(See Sulu.)
Moros Sámal (Tawi Tawi)	do	(See Sámal.)
Mundos (Iloílo)	Bukidnon	(See above.) I do not know the derivation of this curious word. It has been used also for the "Remontados" of Cebú, but it should not be retained.
Negritos (Isabela, Ilocos Norte, Zambales, Tayabas, Negros Oriental, Iloílo).	Negrito	"Little Negroes;" this name was early applied to these pygmy blacks by both Spanish and Portuguese. In the Relación de Encomiendas of 1591 there is employed the other diminutive form of negro, *negrillo*, and this same form is used by Chirino, 1604, but De Quatrefages has distinguished the use of these two terms, employing "Negrillos" for the pygmies of Africa only, and "Negritos" for the pygmies of the Malay archipelago and in this he has been followed. I consider Negrito the best term to use for these Philippine aborigines. There are many other local designations current in this archipelago—Aeta, Ita, Eta, Agta, Aita, Baluga (Pampanga), Dumagat (Pacific coast of Luzón), Mamanua (Surigao), etc. In some cases the race is mixed with intrusive Malayan blood. I have accordingly used the term Negrito wherever the original race and type appear to predominate and have discarded it where the principal element is Malayan, as is the Batak, Tagbanúa, and Mangyan.
Negritos Attás (Cagayán)	do	(See above.)
Negros (Cápiz)	do	(See above.)
No Cristianos (Mindoro)	Mangyan.	
No Cristianos (Igorrotes) (Benguet).	Igorot	(See above.)
No Cristianos (Negritos) (Nueva Vizcaya).	Negrito	(See above.)
No Cristianos (Zambales)	do	This term has been adopted by the Philippine government to designate the pagan and Mohammedan peoples of the Philippines as distinguished from the Christianized.
Nomadas (Rizal)	Bukidnon	Nomads or "Remontados." This term here refers to a group of wild Tagálog people, who tradition says ran away from the town of San Mateo, and whose descendants to-day roam the mountains back of Montalbán in association with the Negrito.
Nuevos Cristianos (Pangasinán).	Igorot	"New Christians" was a term employed by the Spanish to designate the newly baptized pagans of northern Luzón and

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Nuevos Cristianos—Continued.	Igorot—Cont'd.	Mindanao. Practically all those whom I have seen have relapsed into paganism since the end of Spanish rule.
Palawanos and Palauanas (Paragua Sur).	Tagbanúa..	"People of Palawan;" so in the census are designated two groups of natives numbering 338 in all. I think they are aborigines, i. e., not Sulu or Sámal immigrants, and so have included them with the Tagbanúa.
Parananes (Cagayán).....	Negrito....	Derivation and significance of this word are unknown. It is used to designate a ranchería of 84 people in the municipality of Baggao.
Salvaje (Pampanga, Rizal).	.....do	Mixed Negrito-Malayan savages who wander through the mountains. Predominant type and mode of life are Negrito.
Sama Bitali (Zamboanga)..	Moro.....	(See Sámal below.) There are many local names applied to themselves by the Sámal dwelling along the coasts of Zamboanga.
Sama Lipid (Zamboanga)..	.....do	Local variant for a small group on an island off the coast of Zamboanga.
Sama Lutangen (Zamboanga).	.....do	These people represent an intermediate stage between the "Sea Gypsy" and the settled Sámal. Some of them have built houses over the water and are abandoning their sea life; other Sama Lutangen still live on their boats.
Sama Narvan (Zamboanga).	.....do	Local distinction for Sámal.
Sámal (Zamboanga, Basilan, Dávao).	.....do	(See above, "Sámal Laut.") The Sámal are an exceedingly important element in the Sulu archipelago. Their former locus, where the pure Sámal dialect was spoken, is in the islands between Basilan and Joló, especially Tonguil and Balanguingui. These were the very latest pirate haunts to be broken up by the Spaniards. The Sámal are now scattered along the coast of Zamboanga and nearly everywhere in the archipelago of Sulu.
Sámal Laut (Zamboanga; also throughout Sulu archipelago and along southern coast of Mindanao).	.....do	The word means "Sámal of the Sea," and refers to the habits of these people who live almost wholly upon the water, in their small boats, fleets of which shift from island to island with changes of the monsoon. These people are found throughout the entire Malay archipelago, and are variously known as "Orang Laut" (Men of the Sea), "Sea Gypsies," "Bajau," the latter, the name given them by the Bugis of Célebes. They come originally from Johore, and the islands in the Strait of Malakka and are only imperfectly Mohammedanized, some being quite pagans. The "Sámal" who occupy many large towns in the Sulu archipelago and along the coasts of Zamboanga are, in my opinion, descendants of the "Sámal Laut" or "Bajau," who

Classification of non-Christian tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Sámal Laut—Continued.	Moro—Con.	have left life in their boats for the more settled life of the beach. They have gained in material conditions and in the depth of their Mohammedan profession by this change, and feel strongly the difference between themselves and their affilés, the "Men of the Sea."
Sangil (Dávao)	do	Sangil is a local term apparently derived from the volcano of the same name. It is sometimes applied as a collective title for pagan tribes of that region and sometimes to the Maguindanao Moros, who have settled between Craan and Makar.
Sanguil (Dávao)	Bilan.	
Silipanes (Nueva Vizcaya).	Igorot	The Silipan is a strong dialect group in the comandancia of Quiañgán.
Simaron (Ambos Camarines).	Bukidnon	Simaron is a corrupt spelling of Cimarron, for which see above.
Subanon (Zamboanga, Misamis).	Subanon	The word is compounded of "suba," river, and the suffix "non," and means people of the river. This word is a good tribal designation and is of general use, and has been known a long while. Combes in his *Historia de Mindanao y Joló*, 1667, employs it frequently. The tribe is an important one.
Subanos (Zamboanga and Dapitan).	do	Spanish form of Subanon.
Sulu (Zamboanga)	Moro	Sulu is the native designation for the island and people of Joló; the latter form is a Spanish corruption of the same word. Sulu is pronounced in a number of ways, "Suul," "Sug," and "Sulug," probably the latter is more frequent, but I have preferred to have it Sulu, the form which has had long standing.
Tabanúa (Paragua and Paragua Sur).	Tagbanúa	Composed of the Malay-Polynesian word *banua* (*manua*, *fanua*, etc.) and the prefix *taga*. The word means "people of the country," "aborigines." It is the generally accepted and well-known designation for this tribe of Paragua.
Tagablis (Cottabato)	Tagabili	People of Bili, which perhaps means Lake Bulúan; also appears sometimes as Tagabaloy.
Tagacaolos (Cottabato, Dávao).	Bagobo	Probably derived from the word "*olo*," meaning "head," and thus "source" (of a river), the particle *ka* "toward," and the prefix *taga*. The entire word meaning "people who go up toward the source of the river," to distinguish them from the "Tagabawa," people who live in the lowlands, *bawa* meaning "down," the "region low down."
Tagaud (Dávao)	Mandaya.	
Tagbanúa (Paragua and Paragua Sur).	Tagbanúa	(See above.)
Tandalanes (Paragua)	Batak	I know nothing about this term; it is used as the tribal name for a ranchería of seventeen people in the Batak region.

Classification of non-Christain tribes—Continued.

LOCAL NAME OF TRIBE USED BY ENUMERATORS AND OTHERS.	Proper tribal name.	Explanatory notes.
Tigaonon (Surigao)	Negrito	This word seems to be compounded of the suffix *non* and Tigao, a town across the mountains from Butúan, on the Pacific coast side of Surigao. The word would mean "people of Tigao." They are probably mixed Mamanuas.
Tinguianes (Ilocos Sur, Abra).	Igorot	This word is derived from *tingues*, meaning "mountain," a Malayan word, archaic and almost unused now in Tagálog, and the suffix *an*. The word was formerly employed in Laguna de Bay to designate the "people of the mountains," the "Tagabundok," but this use has almost disappeared. For nearly two centuries it has been used to mean the pagan people of Abra. These people are, in my opinion, simply Igorot in descent. Their dialect, "Itneg," is spoken by the Igorot of northern Bontoc and the Saltán river valley, but they have developed toward civilized life, being about on the same plane of culture as the Ilocano, and are well known both in these islands and in writings on the Philippines.
Tinguianes (Nueva Écija)	do	These so-called "Tinguianes," belong to the same dialect group as the Igorot of Benguet.
Tirurays (Cottabato)	Tiruray	According to Dr. Pardo de Tavera, this word is derived from *atew rooter*, "people living above," i. e., up the river.
Vilanes (Dávao)	Bilan.	
Visayan (Negros Occidental)	Bukidnon	These are un-Christianized remnants of the old Visayan population.
Yakans (Zamboanga, Basilan).	Moro	Important Mohammedanized tribe of primitive Malayans occupying all the interior of Basilan.

CHINESE AND OTHER FOREIGN ELEMENTS IN FILIPINO RACES.

In the previous part of this report the treatment has been confined very largely to a discussion of the Malayan origin of the Filipino peoples and the growth and extension of this Malayan element. It may be proper here to consider what foreign elements there are which have mingled in this archipelago to form the present Filipino people.

The impression appears to have gone abroad that the Filipino people is a very mixed product, and that the blood of numerous nationalities has mingled with the original stock in sufficient quantities to form permanent and decisive influences on the race, but it appears to be more nearly the truth that the type of all the Christianized Filipino peoples is predominantly Malayan.

The only other race, which, in the writer's opinion, has been of sufficient importance to modify the type, is the Negrito, and this only in certain districts. The Negrito appears to have disappeared by absorption from many places where he was once relatively numerous. By a slow and gradual process the two racial elements of Malay and Negrito commingled. The numbers and power of the former, however, were decidedly superior, so that the remaining type is Malayan rather than Negrito. At the same time in many communities and in thousands of individuals in the islands, Negrito blood is indicated by a slightly reduced stature, wavy hair, a plumpness of face and figure, a broadening of the nose, and other characteristics which need not be mentioned here. The mixture has had the effect of adding to the comeliness of the native rather than to decrease it. Particularly does the wavy hair, which can be attributed only to a Negrito source, give a beauty and piquancy to the face and head.

I believe it a fair assumption that previous to the Spanish conquest these two races were the only ethnic sources of the Philippine population. The frequently met hypotheses of Japanese and Chinese elements, particularly in the tribes of northern Luzón, are simply repetitions of the unscientific speculations made centuries ago by the early Spanish writers. There is little to justify such assumptions. There was apparently no colonization of these islands previous to the Spanish conquest by either Japanese or Chinese. As we shall see presently, the Chinese traded to some extent from Luzón south to Mindanao, but there are no evidences of Chinese settlements in the Philippines as there are in north Borneo, where the former presence of Chinese immigrants is revealed in place names and traditions.

The Spanish colonization, followed as it was by intermarriage between Spaniard and Filipino, produced its effect in modifying the race to some degree, but it must be clearly understood that no such colonization of Spaniards took place in the Philippines as in Mexico. Few of the Spaniards who came to the islands during the early days left descendants. There is extant an interesting letter of the famous sea captain, Sebastian Biscaino, written in the last years of the sixteenth century, in which he grieves over the loss of Spanish life which accompanied the conquest of the Philippines. "The country," it states, "is very unwholesome for us Spaniards, for within these twenty years, of 14,000 which have gone to the Philippines, there are 13,000 of them dead, and not past 1,000 of them left alive." (*Hakluyt's Voyages*, edition 1698, Vol. I, page 560.) Outside of the religious orders there were very few Spaniards in the Philippines until the last half of the last century. The proportion of the Filipino population of mixed Spanish blood is, I believe, accurately summarized and stated by Martinez de Zúñiga at the beginning of the last century. He gives for nearly all provinces

the number of mestizo tributes in comparison with those of the pure Filipino. In the entire archipelago there were about 14,000 families, or tributes in which there was Spanish blood. This was a proportion of 4.8 per cent in a total Christian population of about 277,000 families. The proportion of mestizo families was greatest in the provinces of Tondó, Bulacán, and Pampanga, and was also relatively large in Cavite. In these provinces it amounted to 19.5, 10.8, 13.7, and 13 per cent, respectively. It was very small in Tayabas, only 12 families out of a total of 7,396; and small also in Mindoro, Leyte, and Cápiz. In La Laguna and Batangas the proportion was about the same, 336 families in a total of 14,392 in the first province, and 451 out of 15,000 families in the second. It was much less in Ilolío than might have been expected, only 166 out of a total of nearly 30,000 are reported by this writer. The proportion of Spanish families in Cebú is strikingly different from Ilolío, amounting to 625 in a total of 20,812. This proportion of about 5 per cent of mixed Spanish blood did not, I believe, appreciably change with the closing years of the Spanish Government. The opening of the Suez canal and the establishment of steam communication by way of the Mediterranean, brought a considerable number of Spanish settlers in the last half of the nineteenth century, to whom, in a considerable degree, is due the marked industrial development that characterized the last decades of Spanish rule, and these Spaniards, having married daughters of the country, form, with their children, a special class of great influence among the Filipino people, but their numbers are much smaller than is commonly supposed, and constitute only a few families to a province.

Apart from the Chinese and Spanish, the admixture of foreign population has been so trivial that it can be quite disregarded. This is the opinion of Blumentritt, who has given the question long and laborious study. (See the Introduction to his *Versuch Einer Ethnographie der Philippinen.*) As a matter of historic interest rather than because of any ethnic importance the other foreign influences may be summarized.

The settlement of Manila and the growth of trade in this port at the close of the sixteenth century drew many Asiatic peoples here for the purpose of commerce. Morga, in his *Sucesos de las Islas Filipinas*, describes at length the ships which, between the months of October and June, lay off the mouth of the Pásig. There was the fleet from China, composed of from thirty to forty junks, called champanas; the Japanese ships from Nagasaki with cargoes of wheat, silks, objects of art, and weapons; the fleets of the Portuguese from India and Malakka; trading ships from Cambodia and Siam; and the smaller Malayan craft from Borneo and the Sulu archipelago; but these visiting mariners and merchants produced no modification of the ethnic character of

the inhabitants of the Philippines, at least not outside of the city of Manila, which, from its foundation, has always been cosmopolitan in population.

The Japanese settled here in small numbers about the end of the sixteenth century. Their community lay between the Parian, or Chinese quarter, and the barrio of "Laguio," probably Paco. Morga states that in his day there were about 500 of them. The Franciscans had spiritual authority over them and had made some converts, but a few years after this the persecutions of the Spanish missionaries in Japan began and that Empire closed its doors to foreign intercourse, and there has been no subsequent colonization of Japanese in the archipelago. They have been coming in small numbers since the American occupation.

A few negro slaves were brought in from Africa and India by the Portuguese ships trading here. They are mentioned by Morga and also by the Franciscan *Relación*, already quoted, which states that a number of them, who were found in a miserable and starving condition, were cared for by the Franciscan brothers, but these few and wretched individuals certainly could have had no influence upon the character of the race.

There appear to have been several thousand Mexican Indians brought to the islands as soldiers at different times. The famous regiment of the King, practically the only standing army at certain periods, and comprising from 400 to 600 individuals, was supposedly made up of Indians from Mexico and Peru, but so small a number of colonists as these in the face of a population which, as we have seen, was continually multiplying, would have produced an influence too small to be estimated or to be taken into calculation.

Upon the retirement of the Spaniards from the Moluccas in 1660, the Jesuit missionaries brought with them from the island of Ternate a small colony of converts who, with their families, settled near Maragondong, in Cavite province, where their descendants still live in a municipality called "Ternate" after that island. These people have become, in the course of the two and a half centuries that have intervened since the arrival of their forefathers, Filipinos in all externals of life, but the locality still maintains something of its own special character, and many little peculiarities of speech and custom are observed which differentiate the community from the surrounding Tagálog towns.

The above, as far as the writer's knowledge is concerned, are the only instances of foreign colonization in the Philippine Islands during the historic period, except by the Chinese. As a general conclusion in regard to the ethnic character of the race, it may be stated to be everywhere of a common Malayan origin. The seafaring Malays, who

were the decisive element, in some cases, perhaps, absorbed land dwelling, primitive Malayans, who had preceded them in occupation. The type and quality of the race has been influenced in numerous instances by an element of Negrito blood, but it is nevertheless everywhere predominantly Malayan. Among its upper and wealthier classes, but embracing only a comparatively small number of individuals out of the entire population, are those having Spanish and Chinese blood in their veins, but in the cases of both of these last races foreign influence due to intermarriage has affected not the race as a whole but only certain families within it.

Next to the Spaniard, foreign influence has been greatest on the part of the Chinese, and these people have played so conspicuous a part in the history of the archipelago and their presence forms so important a political problem for the future that they call for more extended remark. Chinese trade with the Philippines is far older than the Spanish conquest. The centuries which immediately preceded the European discovery of the Far East, the period which saw the founding of Manila and that of the city's early prosperity came at the time when the Empire of China was under its last native dynasty—the Ming. The rule of this famous house is notable in China, not only for its literary achievements, its construction of great public works, including the Grand canal, but also for a spirit of hospitality, advancement, and adventurous commercial conquest, which seem to us quite foreign to the attitude of the China of to-day. It was during this period that the Chinese vastly extended their commerce. The fleets of Chinese junks not only became familiar with the rich island world to the south of them, but they crossed the Indian ocean to the coasts of India as well. The reports of the Arab merchants, who about the same time reached the Malabar coast of India, describe the presence in the great emporium of Calicut of the fleet of huge Chinese junks, with their matting sails, their curious vegetable gardens, their households including hundreds of people living upon a single vessel, and give account of the annual voyages of these trading fleets from China to India and return.

To this active commercial spirit of China the Philippine Islands, with their very sparse population and undeveloped commercial products, had less to offer than the archipelago to the south or the civilized coasts of India. Yet we know that about three hundred years before Magellan's discovery the Chinese fleets were regularly visiting and trading with Luzón and Mindanao and the islands that lie between. An account of this Chinese trade has come down to us in the writings of the Chinese geographer, Chao Ju Kua, a work not later than 1250, and probably some decades earlier. In this work the country of the Philippines is described under the name of Mayi.

No less than nine islands of the group are described, but the trade evidently centered in the Bay of Manila. A community of a thousand native families is stated by Chao Ju Kua to have been living here on the banks of a winding river, doubtless the Pásig. The Chinese trading vessels anchored in front of the river mouth and the market seems to have been established on the shore. The Chinese brought pottery, lead, glass beads, iron cooking pans, iron needles, and received in return the products of the country, which were wax, pearls, shells, betel nuts, and native fabrics and cloths, and fine mats. On their voyages farther south in the archipelago the Chinese were not accustomed to land, but gave knowledge of their presence by beating great gongs, which led to visits from praos of the natives. Later on a trading mart with the Chinese grew up at Butúan in northern Mindanao, where gold and slaves were exchanged for the products brought by the Chinese, but this entire Chinese trade, until the settlement of the Spaniards at Manila, appears to have been limited to an annual voyage of the fleet of junks. Then the demands of the Spanish for the food products, the marketable wares and fabrics of China, the need of Chinese servants and laborers, and, above all, the enormous quantities of Mexican silver which were brought to sustain the Philippine colony, contributed to the formation of a great commerce and to the settlement of thousands of Chinese in the islands.

The attack of the Chinese pirate, Limahong, in 1574, gave a shock to the Spaniards' sense of security from which it took long to recover. Nearly a hundred years later the Moluccas were abandoned under fear of a similar blow from the pirate Kue Sing, of Formosa, but the attitude of the Chinese Government itself, as displayed by the viceroys of Fukien and adjacent provinces, was unquestionably favorable to the Spanish government of the islands, and desirous only of commercial relations. Limahong's power had not been wholly destroyed on the island of Luzón before an ambassador arrived from the province of Fukien petitioning for the delivery of the pirate that he might be returned for punishment, and the following year a port of China, probably Amoy, was opened to the Spaniards' trade.

Following these events the Chinese gained an important place in the commercial and industrial life of Manila. They came under the special interest and protection of the missionary friars, zealous for the spiritual conquest of the Empire of China, and their flourishing condition in the early history of the colony is described in a letter from Fray Domingo de Salazar, the first bishop of the Philippines, to the King, dated Manila, June 24, 1590. (*Carta Relación de las Cosas de la China y de los Chinos del Parian de Manila*, in Retana's *Archivo del Bibliófilo Filipino*, Vol. III.)

In this letter the bishop states:

When I arrived in this land I saw in a pueblo which is called Tondó, near to this city—a river between them—that there was a large number of Sangley inhabitants, some of them Christians, but the most infidels. There were also in this city certain Sangleyes who had settled down there to sell their merchandise, so that they remained there from one year to another. These Sangleyes were scattered among the Spaniards, without having any fixed place to live, until Don Gonzalo Ronquillo assigned them a place where they should dwell, a kind of market, *alcaicería* (silk market), which here we call the Parian, with four great quarters. Here they made many stores, and a greater business commenced, and more Sangleyes came to this city. I, with the desire of bringing about the conversion of these people, immediately cast my eyes upon them, seeing to it that they were well treated, because in this way they should be attached to our law, knowing that this was the wish of Your Majesty; because where there are Spaniards there are always some that are unruly, and, without having consideration for the good example which they are under obligations to give to these infidels, treat them ill.

The bishop then describes the protection he has thrown over the Chinese, their own gratitude, the consequent increase of trade, the larger arrivals of the Chinese in the islands, and the steps taken by him for their conversion. They had previously been in charge of the *religious* of St. Augustine, who preached and taught them the doctrine not in Chinese but in the language of the Filipinos. With the arrival of the Dominicans in the year 1586, however, the spiritual welfare of the Chinese was entrusted to them; their church was built close to the Parian market, and the Parian itself was rebuilt in a more durable way.

The busy traffic and industry which went on in this Chinese quarter is described by Salazar:

There were in the Parian, in addition to common merchants and artisans, physicians and apothecaries, silver workers, marble engravers, painters, etc. There were also many gardeners among these Chinese, and, with the grain and flour brought from China, Chinese bakers provided the city with bread. Among the advantages which the increase of these Chinese has brought to the city there is one, and that not of the least, that while in Spain stonework is so costly and difficult to make, in this city, because of the diligence and efficient labor of the Chinese, houses of hewn stone are built good and cheap, and in such brief time that within a year there was a man in this city built a house in which he could live. And they go on making houses of a sumptuous character, and churches, monasteries, hospitals, and a fort, all with such brevity that it is a matter of admiration. They make brick and tiles in great quantities, cheap and very good. The lime at first was made from stone as in Spain, but the Chinese are given to making it of some little stones which are found on this coast and which are called "white corals," and of oyster shells, of which there is a great quantity; and although at first this did not seem to us a good kind of lime, later it proved to be such, and so good that in this city there is not used anything else.

The day wage of the Sangleyes, when they are working by the job, is a real each day with food. They are great workers and very saving of money.

There live in this Parian ordinarily three or four thousand Sangleyes besides those who come and go in ships, who are usually more than two thousand, and with these and with those who reside in Tondó, and with the fishermen and gardeners who live

in the suburbs, the fathers of St. Dominic tell me that they have in their charge ordinarily six to seven thousand Chinese, in whose conversion and administration four *religious* of this order are occupied.

This number may accurately indicate the Chinese colonists and merchants twenty years after the founding of Manila, but the Relación de Encomiendas, prepared by Gov. Gómez Pérez Dasmariñas and transmitted to the King in May, 1591, makes the number of Chinese resident in the city at that date much less.

Within this city there is the market Parian (*alcaicería del Parian*), which is the Sangley merchants' market, with 200 stores, in which there may be two thousand Sangleyes, a little more or less, with their judge and alcalde, and besides these there may be in the city, in Tondó, and scattered through the islands in different trades and traffics, more than a thousand more.

The name "Sangley," by which the Chinese are known even to the present day, appears to be derived from the Chinese words "Kang Liu," or trader. Navarrete, writing about 1650, states:

The Chinese merchants that sailed to Manila, being asked who they were and what they came for, replied Xang Lei—that is, we come to trade. The Spaniards, who understood not their language, conceiving it to be the name of the country and putting the two words together, made one of them, by which they still distinguish the Chinese, calling them Sangleyes. Thus have we Europeans corrupted many other words in those parts. The name of the Philippine Islands is Liu Zung; the Spaniards corrupted the words and called them Luzón[1].

In these early decades of Spanish rule the Philippines were so poor in resources and so sparse in native population that they were unable to provide either sufficient food or labor for the Spanish colonists. The early life of Manila rested upon Chinese labor and upon Chinese trade. From the junks came not only the finished silks and costly wares with which were loaded the Acapulco galleons, but also cattle, horses, mares, food stuffs, fruits, and even ink and paper, "and what is more," observed Padre Chirino, the first historian of the Philippines, "from China come those who supply every sort of service, all dexterous, prompt, and cheap, from physicians and barbers to burden bearers and porters. They are the tailors and shoemakers, metal workers, weavers, and every sort of servitors in the commonwealth." (*Relación de las Islas Filipinas*, 1603, second edition, page 18.)

Yet then, as now, opinions varied greatly as to the desirability of the Chinese in the Philippines. Among the most interesting documents recently published in the series of volumes, *The Philippine Islands*, 1492–1898, is one which describes the effect of the presence

[1]An account of the Empire of China, also Many Remarkable Passages and Things Worth Observing in Other Coasts in several Voyages, written in Spanish by R. F. F. Domingo Fernandez Navarrete, Divinity Professor in the College and University of Saint Thomas at Manila, Apostolik Missioner in China, etc. In Churchill's Voyages, Vol. I.

of Chinese on the native population of the Philippines. Under Gómez Pérez Dasmariñas in 1593 investigations were ordered as to the causes of the idleness and decay of the native population in Pampanga and the vicinity of Manila. Depositions were taken in a number of towns surrounding the capital, and the conclusions summed up as follows: The arrival of the Spaniards had brought large quantities of Mexican silver. The disbursement of this silver in the form of wages, servants' hire, etc., had attracted into the city great numbers of natives, so as to break up the rural population, stop the rice planting, and occasion a general cessation of industry. The natives having obtained from the Spaniards silver in return for service, instead of planting for their own sustenance and weaving the native cloths for their own habiliments, bought both food and clothing of the Chinese. Thus the native industry of weaving had declined and was in danger of entirely passing away. Not inferior in interest to any of the decrees of the Spanish governors is that of Governor Dasmariñas remedying this economic condition. In 1593 he passed an order absolutely prohibiting the sale of cotton goods by the Chinese to the Filipino inhabitants. In this decree and in attending testimony there is clearly portrayed the distrust and suspicion always evoked by Chinese competition.

As the years went on and the number of Chinese continued to increase, we find this feeling growing among the Spaniards, so that even so intelligent and fair-minded an observer as Doctor Morga, president of the Audiencia and at one time governor of the islands, was clearly opposed to the presence of the Chinese in the islands. He stated that their number was so great that there was no security in the land; that their life was bad and vicious; that through their intercourse with them the natives advanced but little in Christianity and Christian customs; and that the Chinese were such terrible eaters that they made food scarce and prices high. If permitted, the Chinese would go everywhere throughout the islands seeking profit and trade and committing a thousand abuses and offenses. They explored every river, estero, and harbor, and knew the country better even than the Spaniard himself, so that if an enemy should come they would be able to cause unbounded mischief. (*Sucesos de las Islas Filipinas*, second edition, page 364.)

Morga's description of them brings us down to the first years of the seventeenth century, when the first outbreak and massacre of the Chinese occurred. In 1603, if we may trust Fray Concepción, Historia General de las Filipinas, there were more than 20,000 Chinese in the islands, while the Spaniards in Manila and its environs did not amount to 800. In the month of March of that year there came in one of the champanas, or great trading junks, three high mandarins pretending to be sent by the Emperor of China to inquire of the existence of a

mountain of gold in the province of Cavite. Considering the vast sums of Mexican silver which had flowed from Manila into China ever since the Spanish settlement, the existence of such a fable among the Chinese is, perhaps, not so surprising. In any event, it is no more absurd a myth than the Spaniards themselves pursued throughout the length and breadth of America,[1] but the visit filled the Spaniards with suspicion of an invasion. "Their intentions," says Concepción, "were to learn carefully of our small and weak forces that, if they should find them as they were, the Empire of China would send squadrons to the conquest." (Fray Juan de la Concepción, *Historia General de las Filipinas*, Manila, 1788, Vol. IV, page 51.)

The Spaniards were left anxious and fearful by this mission and began preparations to meet an insurrection. Lances were distributed to the Indians, "but," says Fray Concepción, "the Chinese grew constantly bolder and more insolent, and finally on the evening of the Feast of the Glorious St. Francis, throwing off pretense, they openly declared against the city, blew their trumpets, displayed their war banners, and commenced to kill the people and burn the houses." The result was the almost complete extinction of the Chinese.

Harsh criticism has been visited upon the Spaniards for this massacre of the Chinese. Foreman paints an absurd picture of the Chinese being practically forced into this insurrection; many an unhappy one, with tears in his eyes, reluctantly shouldering a weapon. But all the facts and all that is known of the Chinese colonist is emphatically against such an interpretation of the situation. The Spaniards were few—the Chinese were numerous and apparently vicious and insolent. They were sufficiently powerful, at least in numbers, to entertain expectation of being successful in their outbreak.

We can form a much fairer estimate of the probable causes and methods if we compare it with the revolt of the Chinese in Sarawak in 1857, in the time of Rajah Charles Brooke. Except for the numbers engaged, the parallel is almost complete. In Borneo the Chinese rose suddenly upon the European government, wantonly killed all who fell in their power, gained a brief ascendency, and within a few weeks, through their lack of organization, the failure of their courage, and the treachery of their leaders, lost everything they had gained and fell a prey to the Malayan tribes who surrounded them. Sir Spenser St. John, who was a witness of the revolt, characterizes it in the following words:

> Thus terminated the most criminal and causeless rebellion that ever occurred, which, during its continuance, displayed every phase of Chinese character—arrogance, secrecy, combination, and utter incapability of looking to the consequences of events or actions, and a belief in their own power and courage, which every event

[1] Compare the American myth of *El Dorado* and the tremendous waste of Spanish life in attempting to find this treasure. (See Bandelier, *The Gilded Man.*)

belied. The Chinese under their native leaders have never fought even decently, and yet up to the very moment of trial they act as if they were invincible. This insurrection showed, in my belief, that, although the Chinese always require watching, they are not in any way formidable as an enemy. (*Rajah Brooke*, by Sir Spenser St. John, London, 1899, page 107.)

The Spanish historians announce that the revolt of the Chinese in 1603 was followed by legislation prohibitive of their entrance into the islands. I am unable to find any copies of these acts, and they do not exist in the archives of the city of Manila. Other acts of legislation to prevent the settlement of Chinese in the islands which will presently be discussed, were passed from time to time during the seventeenth century. But, in spite of the strictness with which these measures were framed, they were not strictly regarded in the Philippines. Chinese began to return to the islands almost at once after the cessation of the troubles of 1603, and within a few years surpassed in numbers the population previous to the outbreak. In spite of the fact that they were disliked by the Filipino himself and that they were regarded by many of the Spanish administrators as an unfortunate element in the islands, increasing, as they did, the distaste of the native for labor, driving him out of the trades and preventing his learning and practicing the various crafts necessary to the life of the islands, they nevertheless were found to be so necessary to the development of the colony, especially as artisans, that they were admitted in increasing numbers. Spreading from Manila they followed up the line of the Pásig river, planting gardens and practicing here the same laborious methods of cultivation that are current in China, and they settled in large numbers upon the south shore of Laguna de Bay in the vicinity of Calamba. Here, in the fall of 1639, they broke out in a second insurrection.

The causes of their dissatisfaction are stated by the historian Fray de la Concepción to have been due to the action of the governor, Corcuera. The latter, considering that trade had been unduly stimulated in the previous years, did not in the year 1639 send the Acapulco galleon on its customary voyage. As a consequence the usual supply of Mexican silver was not available for the purpose of trade, and the Chinese, who absorbed the greater part of this bullion, suffered accordingly. Corcuera was actively pushing his conquests among the Moros of southern Mindanao, and the extensive armaments and expeditions fitted out for him called for increasing taxation, which fell heavily upon the Chinese. The revolt started, however, not with the Chinese in the Parian, but with the gardeners and farmers on the shores of Laguna de Bay. These rose in November, 1639, killed the alcalde mayor of La Laguna and the priest in charge of that district, and in a precipitate mob came down the Pásig river, burning and plundering. Many of the Chinese of the Parian and the Tondó districts left the

vicinity of Manila and went up the river and joined them. Together they attacked the house of the Jesuits at San Pedro Macatí, and it was around this rest house that the only pitched battle of this insurrection took place. The forces of the Spaniards were led by the sergeant-major and included about 200 Spanish soldiers, 100 Indians from Pampanga, and 400 Zambalan archers. The Chinese were routed and scattered. Detached bands wandered over the country, falling upon the Indian villages, pillaging and attacking and being in turn cut off and destroyed by the natives. The Chinese destroyed the town of Taytay, burning the church and hacking to pieces the images and the altar, in spite of the resistance of the Indians. The disturbances lasted from November until the following March and, according to Fray de la Concepción, cost the lives of 22,000 Chinese, 50 Spaniards, and 300 Filipinos. Seven thousand Chinese surrendered themselves into the hands of the Spaniards at the conclusion of these troubles, and were punished by being sent to the galleys as rowers for the expeditionary fleets of Corcuera.

That peculiar courage of the Chinese which, in spite of his constitutional timidity, will take him anywhere in the midst of danger and hardship for the purpose of trade, was immediately displayed in the case of the Philippines, and there seemed to be no cessation in the visits of those junks which annually anchored off the mouth of the Pásig for trade with the Spanish colony, and from these vessels Manila immediately began to receive permanent colonists, who remained after the sailing of the fleet in the early summer on its return to China, and who very soon began to fill again the busy shops and workrooms of the Parian.

A third massacre of the Chinese is frequently stated as having occurred in the seventeenth century, at the time when the Philippines were threatened with conquest by the Chinese pirate, Kue Sing. The career of this astonishing Chinaman has been frequently set forth, and is described in great detail by Navarrete, who was a contemporary of this man and a missionary in China during the last years of the Ming power. About 1664 he wrested the island of Formosa from the Dutch, and determined to reduce the Philippines to submission and vassalage, sending a Dominican missionary to Manila with his arrogant demands. In spite of the firm attitude of the Spaniards, the natives were thrown into a panic by this threat of impending conquest. By order of the governor, all Chinese, except those who were Christianized, were ordered to depart from the Philippines. The Chinese junks in the harbor were ordered to take their goods on board and depart. Probably intimidated and alarmed by these orders, and misunderstanding their purport, the Chinese rose and assaulted the city, but were terribly repulsed by the artillery which was mounted on the Parian gate

and the Baluarte of San Clemente. Some of the Chinese escaped from the city by boats and passed up the west coast of Luzón to Formosa. Others fled to the country, occasioning and provoking disorder. The tumult, however, was finally quelled by a proclamation of the governor, which allowed the Chinese to depart from the islands, except those who were Christianized and wished to remain; upon this, order was restored and many of the Chinese remained in the islands.

The preparations of the Spaniards for the attack of Kue Sing were feverish and radical, but the attack was never made. He died even before the reply of the Spanish governor reached his hands, and the menace of Chinese invasion for the last time was removed from the Philippines.

During the sixteenth, seventeenth, and eighteenth centuries numerous decrees and orders were issued having in view the exclusion of the Chinese. Imperfectly enforced as they were, they show the character of Spanish legislation against the Chinese, and in conjunction with the periodical massacres which occurred, effectually prevented any considerable increase in the number of Chinese and served to prevent the Philippines from becoming in any sense a Chinese colony.

At the close of the seventeenth century they are reported to have been about 6,000 in number, and they are interestingly described by the learned Italian traveler and doctor of laws, Carreri. (*Churchill's Voyages*, Vol. IV.)

At the time of the English occupation of Manila in 1762, the Chinese suffered another dispersal and massacre. With characteristic zest for loot, they assisted the English in the pillage of the city and gave subsequent assistance to the invading forces. Numbers of them retired into the province of Bulacán and here, according to Martinez de Zúñiga, plotted a treasonable uprising against the Spaniard, Anda, who was resisting the English invasion. The plot was discovered by Anda, and many of the Chinese were put to the sword and the leaders hanged.

But the Chinese commerce was resumed after the retirement of the English from the Philippines, and an order of May, 1777, deals with many elaborate details for the regulation of the Chinese visiting the islands; the kinds and qualities of the wares are specified, and many provisions are directed to the prevention of fraud.

The importance and wealth of the Chinese in the provinces immediately around Manila, Tondó, Bulacán, and Pampanga at the close of the eighteenth century has already been noted in the previous part of this article. Here, perhaps more than elsewhere in the Philippines, the Chinese settled as residents and colonizers of the country, intermarrying with native families, and becoming the possessors of estates and properties and the controllers of commerce.

In 1828 the Government put into force a new system of regulations of the Chinese known as the *Capitación de Chinos*, by which the revenues derived from the Chinese were greatly extended. The Chinese were divided into small local governments, each under a cabeza who was charged with the collection of personal taxation and its accounting to the alcalde mayor of the province. All Chinese who desired, were at liberty to return to their country within a period of six months. If the Chinese did not pay in three months' time, they were to be bound out to the owners of haciendas at a rate of not less than two reals per diem, which was to be paid to the alcalde mayor. Buzeta says:

This disposition altered entirely the spirit of the legislation on the Chinese, being directed constantly to impede their engaging in commerce, which had, generally speaking, been their occupation. The authorities of Manila prepared a voluminous order to carry out the decree of the Government, overcoming the difficulties and settling the many grave doubts which its realization offered. On consideration of the fact that a great number of Chinese could not gain what was necessary to eke out the scant and frugal diet to which they were accustomed, and who absolutely could not pay the two pesos monthly required of the third class, they established a fourth class, which only paid one peso a month. * * * As nearly the entire number of Chinese live in the suburbs of Santa Cruz, Tondó, and Binondo, the superintendent or corregidor of these pueblos was charged to act as a *padron*, designating the classes and the localities from which they should collect the tribute. These dispositions resulted in showing that there were 5,708 Chinese, of whom 5,278 were living in the province of Tondó and the rest in Cavite and other points in the island of Luzón, of whom 7 belong to the first class of wholesale merchants; 166 to the second class, shopkeepers; 4,509 to the third class, as owners, masters, or directors of factories and workshops; and 830 to the fourth class, day laborers; leaving out 196 who did not pay the tribute because they exceeded 60 years of age and other conditions indicated by laws. The realization of the tribute offered immense difficulties; more than 800 Chinese prepared to return to their own country; 1,083 fled to the mountains, where they sought concealment and protection among the natives, and 453 were reduced to public work, because they had not the means of paying for their voyage to their countryland or paying the tribute. The intendant, an eyewitness of these results, made an energetic representation to the Government in December, 1831, and on the 10th of August, 1834, he was authorized to make a relevy under a more conciliatory basis, to the end that, without prejudice to the interests of the state, they should alleviate as much as possible the fortunes of the Chinese by whom there was little possibility of the tribute being paid. (*Diccionario Geográfico Estadístico de las Islas Filipinas*, Vol. I, page 135.)

These provisions were elaborated and amended by a decree of Governor Corcuera in 1849.

In the last decades of Spanish rule the number of Chinese very decidedly increased. There were over 30,000 in the islands, according to the census of 1876, and in 1886 this number had risen to nearly 100,000. Many are reported to have been smuggled into the islands through the Sulu archipelago by way of Borneo. To prevent this illegal entrance, as well, possibly, as to remove the lucrative Moro

trade from the hands of the Chinese who fairly monopolize it even to the present day, a decree of the governor-general of January, 1886, forbade the Chinese living permanently in the provinces, and absolutely prohibited their engaging in trade with the Moros; and a further decree of July 29, 1888, forbade all Chinese to reside in Mindanao. There is in the archives of the city of Manila a very interesting protest or *reclamación* made three years later by the gobernadorcillo of the Sangley, protesting against the new regulations and requirements.

This appears to have been practically the status of the Chinese when Manila capitulated to the American forces. In September, 1898, by order of the military governor, the Chinese exclusion acts in force in the United States were made operative in the Philippines. By this act all Chinese persons, except former residents who left the islands between December 31, 1895 and September, 1898, and those Chinese who belong to the exempt classes, have been refused permission to land in the islands. From January 1, 1899 to May, 1901, 27,697 returning Chinese were permitted to disembark, and during the same period of time 23,658 Chinese departed from Manila. (*Annual Report of the Military Governor of the Philippine Islands*, 1901, Vol. II, page 21.)

II. CHARACTERISTICS OF THE CIVILIZED OR CHRISTIAN TRIBES.

Extracts from Early Narratives and Reports—Comments of Recent Travelers and of Clergymen—Opinions of some of the American Governors and Census Supervisors—Governor Taft's Description of Filipino Traits and Customs.

There is a strong resemblance, mentally, morally, and physically, between the members of the eight civilized tribes, the principal difference being in respect to language. This is quite apparent when they assemble in large numbers, as well as in their manners and customs and their way of dealing with persons and things. Doctor Barrows has fully discussed the differences which prevail in the several dialects and the probable cause of these variations. It is sufficient to say that while as a medium of communication the dialects are so distinct that one tribe can not understand another, many of the words apparently have a common philological basis. Be this as it may, there is no doubt but that the Filipinos have a common racial origin and, at one time, had a common language; and that the division into tribes with different dialects was largely due to the incessant warfare which prevailed, and still prevails among certain branches of the Igorots and among other tribes, not prevented from free communication by any other obstacle, natural or artificial.

Of the characteristics, manners, customs, and superstitions of the civilized Filipinos a great deal has been written and told. Every professional traveler of consequence who has visited the islands during the past two hundred and fifty years, and a great many other people, have stated their opinions and conclusions, which differ so widely in essentials that it is not easy from their accounts to reach a conclusion regarding the general character of the civilized Filipinos, except as most incomprehensible, or as a people who will fit any description whatever between ignorance and enlightenment, intellectual capacity and incapacity, virtue and vice, treachery and fidelity, cowardice and courage, lying and veracity, the thief and the honest man. Some of these commentators have had years of close contact with and observation of the Filipinos; others have had so little experience with them that one marvels at the accounts they have given, while between the two extremes are those who have had reasonable opportunities for observation and whose views are conservative, but none the less convincing on that account. As this subject is one of much interest, it is proposed to quote, without comment, from those who have been in the Philippine Islands long enough to be entitled to an opinion, and who

have had some opportunity to study the character, manners, customs, and superstitions of the natives. In reading these diverse views it is well to consider the point of view of the relator, as well as his mental attitude toward the subject.

Legaspi, who reached the Philippines in 1565, thus describes the Filipinos of Cebú:

These people wear clothes, but they go barefooted. Their dress is made of cotton or of a kind of grass resembling raw silk. * * * They are a crafty and treacherous race and understand everything. * * * They are naturally of a cowardly disposition and distrustful, and if one has treated them ill they will never come back. * * * They are a people extremely vicious, fickle, untruthful, and full of other superstitions. No law binds relative to relative, parents to children, or brother to brother. No person favors another unless it is for his own interest. On the other hand, if a man in some time of need shelters a relative or a brother in his house, supports him, and provides him with food for a few days, he will consider that relative as his slave from that time on, and is served by him. * * * When these people give or lend anything to one another, the favor must be repaid double, even if between parents and children, or between brothers. At times they sell their own children when there is little need or necessity for doing so.

Privateering and robbery have a natural attraction for them. Whenever the occasion presents itself, they rob one another, even if they be neighbors or relatives, and when they see and meet one another in the open fields at nightfall they rob and seize one another. * * * Any native who possesses a basketful of rice will not seek for more, or do any further work until it is finished. Thus does their idleness surpass their covetousness. * * * I believe that these natives could be easily subdued by good treatment and the display of kindness. * * * But if we undertake to subdue them by force of arms, and make war on them, they will perish and we will lose both friends and foes, for they readily abandon their houses and towns for other places, or precipitately disperse among the mountains and uplands and neglect to plant their fields. * * * One can see a proof of this in the length of time it takes them to settle down again in a town which has been plundered, even if no one of them has been killed or captured. * * * They easily believe what is told and presented forcibly to them. They hold some superstitions, such as the casting of lots before doing anything, and other wretched practices, all of which will be easily eradicated if we have some priests who know their language and will preach to them.

When this was written Legaspi had been in the islands four years.

Francisco de Sande, who was governor from 1575 to 1580, in a letter to Philip IV, said:

Most of the Indians are heathen, but have no intelligent belief or any ceremonies. They believe in their ancestors and, when about to embark upon some enterprise, commend themselves to these, asking them for aid. They are greatly addicted to licentiousness and drunkenness, and are accustomed to plunder and cheat one another. They are all usurers, lending money for interest, and go even to the point of making slaves of their debtors, which is the usual method of obtaining slaves. Another way is through their wars, whether just or unjust. * * * They do not understand any kind of work, unless it be to do something actually necessary, such as to build their houses, which are made of stakes after their fashion, to fish according to their method, to row and perform the duties of sailors, and to cultivate the land. * * * The natives are all very idle. If they would apply themselves to

work a little of the time, they could have all they wanted, but as it is a hot country and they are barbarians, they go naked. Nevertheless, all know how to raise cotton and silk, and everywhere they know how to spin and weave for clothing. There is no need for any one to spend any gold, for they catch the fish which they eat, the wine is made from palms which are very abundant, and from these same trees they obtain also oil and vinegar. In the mountains there are wild boars, deer, and buffalo, which they can kill in any desired number. Rice, which is the bread of the country, grows in abundance. Therefore, they are afflicted by no poverty, and only seek to kill one another, considering it a great triumph to cut off one another's heads and take captives.

Antonio de Morga, who resided in the Philippines several years, the first auditor of the audiencia of Manila, in his book on "The Philippine Islands," published in 1609, wrote as follows in describing the natives of Ambos Camarines:

The people who inhabit this great island of Luzón, in the province of Camarines, as far as near the provinces of Manila, both in the maritime districts and in the interior, are natives of this island, of middling stature, of the color of boiled quinces, well featured, both men and women, the hair very black, scanty beard, of a clever disposition for anything they undertake, sharp and choleric, and resolute. All live by their labor, gains, fishing, and trade, navigating by sea from one island to another, and going from one province to another by land. * * *

They very generally bathe their whole bodies in the rivers and creeks, both old and young, without hesitation, for at no time does it do them any harm. * * *

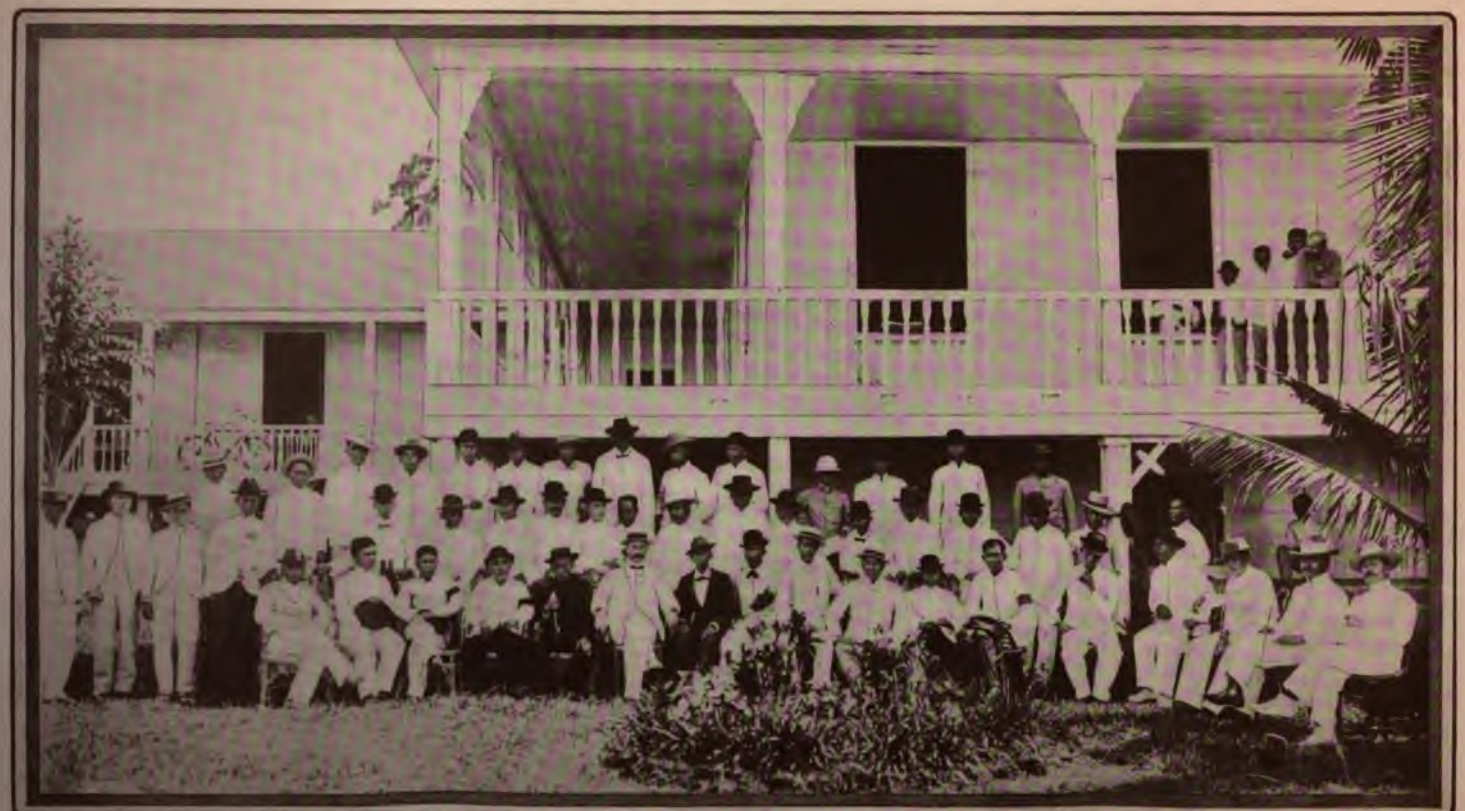
Gaspar de San Agustín, an Augustinian friar, about the year 1703, wrote as follows regarding the natives of the Philippines:

They are generally inconstant, distrustful, malicious, sleepy, idle, timid, and fond of traveling by rivers, lakes, and seas. * * * They are envious, ill-bred, and impertinent. * * * They take care of their own plates, and exhibit in their dwellings some possessed before the arrival of the Spaniards, but in convents and houses they break enough plates to ruin their masters. * * * They are bold and insolent in making unreasonable requests, careless of the when or how. * * * For their four eggs they want a hundred dollars. * * * It matters little, however, for they are just as well pleased when they fail as when they succeed. * * * In selling they will ask thirty and accept six; they take the chance of cheating. * * *

The Indians show great indifference to danger; they will not move out of the way of a restive horse, nor, if in a small boat, give place to a large one. In the river, if they see crocodiles approaching, they take no notice, and adopt no precautions. The Koran says that everyone has his fate written in the marks on his forehead; so think the Indians, not that they have read the Koran, but because of their own folly, which exposes them to daily misfortunes. They are very credulous among themselves. * * * It is evident that the act of faith is supernatural when they acknowledge the divine mysteries taught by the Spaniards. In other matters they believe nothing which is adverse to their interests. They do not object to rob Spaniards, not even the ministers of religion. * * *

Joaquín Martínez de Zúñiga, an Augustinian friar who had lived among the Filipinos for seventeen years, published in 1803, at Manila, a "Historical View of the Philippine Islands," in which he says:

The Indians whom the Spaniards found here were of regular stature, and of an olive complexion, with flat noses, large eyes, and long hair. They all possessed some



GOV-SUPERVISOR GRANT AND PRESIDENTES, PROVINCE OF LEYTE (VISAYANS).

description of government, better or worse, and each nation was distinguished by a different name; but the similarity of their dress and manners proves that the origin of all of them is the same.

Tomás de Comyn, who resided eight years in Manila, in his book "State of the Philippine Islands," published in Madrid in 1820 (translated by William Walton), writes as follows:

They are credulous and superstitious, cunning, yet of weak capacities, but possibly a great number of their social defects may be attributed to their ignorance, want of civilization, and the bad administration of justice. They are, nevertheless, hospitable to strangers, and, excepting in their robberies, piracies, and acts of private and public revenge, harmless in their manners.

They are fond of external show and pomp, and certainly on this account they could not have been so easily captivated by any religion possessing less ceremony and ostentation than the Catholic one.

Besides distance from the mother country, and as will be seen by their history, the dreadful misfortunes to which they have been so frequently exposed, the wavering and uncertain nature of the regulations intended for their government, the hostility of the European rivals, and the litigious spirit of the inhabitants themselves, as well as the unceasing lawsuits and dissensions to which this has given rise, have been of most material injury to the colony.

Dr. Paul de la Gironiére, a distinguished French surgeon who lived in the Philippines for twenty years and, in 1854, wrote an account of his observations, thus describes the natives:

I had sufficiently studied the character of these Indians to be sure that I could rule them only by strict justice and judicious severity. * * * The Tagáloc character is very difficult to define. Lavater and Gall would have been puzzled at the Philippines, where physiognomy and craniology would frequently find themselves at fault. The Indian nature is a singular combination of vices and virtues. A worthy monk once said, speaking of the Tagálocs: "They are great children, who must be treated as if they were little." The moral portrait of these natives of the Philippines is curious to sketch, still more curious to read. The Indian keeps his word, and is yet a liar; anger he has in horror, comparing it to madness, and deeming it worse than drunkenness, which he nevertheless despises. To avenge an injury, he scruples not to use his dagger; what he will least support is abuse, even when deserved. You may flog him when he has committed a fault, and he will not complain; but at hard words he is indignant. He is brave, generous, a fatalist. The life of a robber pleases him by reason of its liberty and excitement, not on account of the wealth he may acquire by leading it. The Tagálocs are usually good fathers and good husbands, two qualities rarely separated. Horribly jealous of their wives, they are careless of the honor of their daughters, and heed not the faults their bride may have committed before marriage. * * * They dislike cowards, but readily attach themselves to the man who is brave enough to court danger. Their ruling passion is play. They are fond of fights between animals, especially cockfights. * * *

The Tagál is well made, rather tall than short. * * His character is gay and pleasant. He is very fond of music and dancing; he is ardent in love, cruel with his enemies, and revenges himself with the poniard, which, like the kreese with the Malays, is his favorite weapon. He keeps his word, is passionately fond of gambling, is a good husband and father, jealous of the honor of his wife, but careless of that of his daughters, whose youthful errors in no way prevent their finding husbands. His sobriety is admirable; water, a little rice, and salt fish, satisfy him. He venerates old age. In a family, at all periods of life, the younger obey the older.

His hospitality is unselfish and disinterested. The stranger who enters an Indian's cabin at mealtime, though there be but what is strictly necessary for the family, is sure of an invitation to a seat at the board. When an old man, whom age precludes from work, finds himself destitute, he goes and takes up his quarters in a neighbor's house. There he is considered as one of the family, and is free to remain until the hour of his death. * * *

Robert MacMicking, an English merchant of Singapore, who resided in the Philippines about three years and published a work on the Philippines in 1851, says of the Filipinos:

The native Indians appear to have a good ear for music, and execute many of the finest operas with spirit and taste. * * * The people appear to possess a superior degree of vigor or freshness of mind to those born in Europe, or in old and thickly inhabited countries. * * * In the character of the native Indians there are very many good points. * * * The most noticeable traits in the Philippine Indians appear to be their hospitality, good nature, and bonhommie, which very many of them have. Their tempers are quick; but, like all of that sort, after effervescing, soon subside into quiet again. * * * In all I have seen or had to do with them they have never appeared as aggressors; and it has only been when the white men, despising their dark skins, have ventured on unjustifiable conduct, that I have heard of their hands being raised to avenge it. When they know that they are in the wrong, however, should the harshest measures be used toward them, I have never known or heard of their having had recourse to the knife, and I have frequently seen them suffer very severe bodily chastisement for very slight causes of offense. They are easily kept in order by gentleness, but have spirit enough to resent ill treatment if undeserved. Their general character is that of a good-natured and merry people, strongly disposed to enjoy the present and caring little for the future. So far as regards personal strength and mental activity or power, they are much superior to any of the Javanese or Malays I have seen in Java, or at Batavia and Singapore. But, to our modes of thinking, the greatest defect in their character is their indolence and dislike to any bodily exertion. * * * A very pleasant trait, to my taste, is the nearly universal frankness and candid look that nature has stamped upon their features, which, when accompanied by the softness of manner common to all Asiatics, is particularly gratifying in the fairer part of creation. * * * The bath is a great luxury among the natives, and of all country-born people, who appear to be fully as fond of the water as ducks are, and never look so well pleased as when they are paddling about in it, for nearly all the women can swim. * * *

Mr. Feodor Jägor, the German ethnologist, who spent two years in the Philippines and made a critical investigation of the people, thus refers to them:

Distinctly marked national customs, which one would naturally expect to find in such an isolated part of the world, are sought for in vain. * * *

They imitate everything that passes before their eyes without possessing the intelligence to appreciate it. It is this which makes both themselves and their artistic productions wearisome, devoid of character, and, I may add, unnatural, in spite of the skill and patience they devote to them. These two peculiarities, moreover, are invariably to be found amongst nations whose civilization is but little developed. The patience so much admired is often nothing but waste of time and breath, quite out of proportion to the end in view, and the skill is the mere consequence of the backward state of the division of labor.

Sir John Bowring, governor of Hongkong, who visited the Philippines in December, 1858, and remained until January 15, 1859, during which he traveled extensively through the islands under very favorable circumstances, in the published account of his visit, said:

Of the credulity of the Indians there is no end of examples. * * * They show much deference to everything that is aristocratic among themselves. * * * Bathing is universal. * * *

As a general result I have not found among these Indian races any one distinguished for intellectual superiority. A few were not backward in their knowledge of the mechanical arts; * * * a universal love and devotion to the musical art, and some appreciation even of the merits of European composers. * * * The impressions made upon him are transitory, and he retains a feeble memory of passing or past events. * * * He receives no favors and can not, therefore, be ungrateful; has little ambition, and therefore little disquiet; few wants, and hence is neither envious nor jealous; does not concern himself with the affairs of his neighbor, nor indeed does he pay much regard to his own. His master vice is idleness, which is his felicity. The labor that necessity demands he gives grudgingly. * * *

The tact or talent of imitation is strong among the Indians, * * * but very various and contradictory reports are found of their aptitudes. * * * I found the love and the practice of music universal. * * * Except on suitable occasions, the Indian is sober and economical, but he makes great efforts at display when desirous of honoring his guests. * * *

While the less honorable characteristics of the people are known to be a universal love of gambling, which is exhibited among the Indian races by a passion for cockfighting, an amusement made a productive source of revenue to the state. Artists usually introduce a Philippine Indian with a gamecock under his arm, to which he seems as much attached as a Bedouin Arab to his horse. It is said that many a time an Indian has allowed his wife and children to perish in the flames when his house has taken fire, but never was known to fail in securing his favorite gallo from danger. * * *

From Mr. William Gifford Palgrave, diplomat, who was British consul at Manila from 1876 to 1878 and published a book of travel, we learn that:

The Ilocan Malays occupy the north, the Tagáls the center, and the Visians the south. Of these three subraces, the first named are the largest and sturdiest in physical build, but of lower mental average and less general adaptability than the two others. The second, a smaller statured, darker complexioned, and sinewy race, are distinguished above all others for energy of character, intelligence, and perseverance. The Visians, graceful, even to beauty in form and gentle in manner, differ little in natural capacity and endowments from the better sort of their congeners in Borneo. Derived from or ingrafted on these three main branches are many lesser sprays. * * * But the persistent, strongly marked Malay type, whether absolutely pure, as among the Visians, or dashed with foreign strain—here more, here less—as is the case among the Tagáls, Ilocans, and their subbranches, predominates in all.

Once recognized, that type can never be mistaken; and it alone would, even in the absence of other testimony, suffice to assert the Mongolian clanship of the Malay. The rounded head, the small but expressive black eye with its slight upward and outward turn, the straight dark hair, smooth skin, and small extremities, hands and feet, are not less distinctly the physical countersigns of Turanian origin than are the tenacious purpose, the organizing and yet more cohesive power, the limited invent-

iveness, and the more than conservative immutability, its mental characteristics. Add to these a concentrated never absent self respect—with its natural result, a habitual self-restraint in word and deed—then only, and that very rarely, broken through when extreme provocation induces the transitory but fatal frenzy known as "*amok*," and in one deadly hour the Malay casts to the winds every feeling, every thought except that of bloody, indiscriminating revenge; add an inbred courtesy, equably diffused through all classes, low or high, unfailing decorum, prudence, caution, quiet cheerfulness, ready hospitality, a correct though not an inventive taste, and a marked tendency to ancestral worship. Such are, as described by the keenest of observers and most truthful of narrators in his "Malay Archipelago," the general attributes of the Malay race, and such are abundantly shared in by the inhabitants of the Philippines, though here they have undergone certain modifications, some favorable, some the reverse. * * *

Mr. A. Featherman, in his "Social History of the Races of Mankind," published in 1887, referring to the Tagálogs, says:

The Tagálos of the higher classes of the interior have preserved many noble traits of character. They are kind and even generous in their social intercourse. They are grateful for benefits received, and are faithful, calm, and considerate. They are very hospitable, and consider it a high honor to receive a stranger, and they make every possible sacrifice to manifest their high regard for their guest. They are fickle in their disposition and are easily affected by external conditions. They are generally proud in bearing and implacable and revengeful toward their enemies. The lower orders are timid and fearful. They are not easily touched by reproaches and love, but take advantage of the weakness of their superiors, but they readily submit to the stern behests of the masters and even endure corporal punishments with unruffled equanimity. As they are indolent by natural inclination, they work only when forced by the necessity of the circumstances. They are remarkable for a sentiment of personal shamefulness called "*hya*," which renders them very susceptible of insult and causes them to respect the feelings of others. They are perfectly composed and are even indifferent in the presence of death, for they believe in inexorable destiny, and fatalism makes them heroes. They yield strict obedience to their chiefs, show much deference to everything that is aristocratic, and entertain the greatest reverence for their spiritual advisers. As soldiers, they exhibit considerable courage and never fail to do their duty on the field of battle. Their intellectual capacity is above mediocrity, though no example of extraordinary talent or genius has ever appeared among them. They are witty and ingenious; their power of imitation is most remarkable, and they are skilled artisans and mechanics without previous apprenticeship. Their intellectual requirements are very limited. They can not tell their own age and they know nothing of the history of their ancestors.

Rudolf Virchow, in his work "The Peopling of the Philippines," published in 1897, writes as follows:

Blumentritt assumes that there is there a primitive black people and that three separate Malay invasions have taken place, whose branches have many traits in accord with the Dayaks of Borneo, especially the head hunting. The second, which also took place before the arrival of the Spaniards, to which the Tagáls, the Visayans, Bícols, Ilocanos, and other tribes belong. The third, Islamitic, which emigrated from Borneo, and might have been interrupted by the arrival of the Spaniards, and with which a contemporaneous emigration from the Moluccas went on. * * * Whether there took place other and older invasions, for this we are not only to draw upon the present tribes, but if possible upon the remains of earlier and perhaps now extinct tribes. This possibility has been brought nearer for the

Philippines through certain cave deposits. We have to thank for the first information the traveler Jägor, whose exceptional talent as collector has placed us in the possession of rich material, especially crania. To his excellent report of his journey I have already dedicated a special chapter, in which I have presented and partially illustrated not only the cave crania, but also a series of other skulls.

Dean C. Worcester, who first visited the Philippines in September, 1887, when he remained eleven months; and later, in August, 1890, when he remained two years and eight months, in his book on the Philippine Islands and their people, published in 1898, says:

The native is a philosopher. He works when obliged to and rests whenever he can get an opportunity. * * * From the very outset our servants stole from us. * * * The Filipinos are born musicians. * * * We were rather touched by their never-failing hospitality. The Philippine native seems always ready to kill his last fowl for a stranger or share with him his last pot of rice. When we stopped at a hut and asked for a drink the inmates were loath to offer us water in the coconut shell cups, which served their own purpose, and hunted up and washed old tumblers or even sent to some neighbor's to borrow them. With a glass of water they always gave us a lump of *panoche* (coarse brown sugar) that we might "have thirst." * * * On the whole, I believe that they are naturally fairly intelligent, and they are often most anxious for an opportunity to get some education. * * * The * * * natives seldom voluntarily confess faults and often lie most unconscionably to conceal some trivial shortcoming. In fact they frequently lie without any excuse whatever, unless it be the aesthetic satisfaction derived from the exercise of their remarkable talent in this direction. When one of them is detected in a falsehood he is simply chagrined that his performance was not more creditably carried out. He feels no sense of moral guilt, and can not understand being punished for what is not, to his mind, an offense. * * *

Too much kindness is very likely to spoil him, and he thinks more of a master who applies the rattan vigorously, when it is deserved, than of one who does not. On the other hand, he is quick to resent what he considers to be injustice, and is quite capable of biding his time until he can make his vengeance both swift and sure.

It is often said that he lacks originality. If this means that he has never made any extensive contributions toward the advancement of science, literature, or art, the charge must be admitted, although the Tagálog race has developed one painter of merit, an author of no mean ability, and some wood carvers who have done admirable work. But the average native, situated as he is, could not be expected to make any advancement along such lines. Within his own sphere he is certainly ingenious, and ever ready with a remedy for any mishap which may occur. * * *

It is very often charged that the * * * native is hopelessly indolent. Indolent he surely is, but whether hopelessly so is another question. * * * No one can work there as he would in a temperate climate and live. Nature has done so much for her children in these islands that they have no need to labor hard in order to supply their few and simple wants. * * * Their laziness might be remedied by increasing their necessities. * * *

The * * * Filipino certainly has many good qualities to offset his bad traits. The traveler can not fail to be impressed by his open-handed and cheerful hospitality. He will go to any amount of trouble, and often to no little expense, in order to accommodate some perfect stranger, who has not the slightest claim on him, and he never turns one of his own race from his door.

If cleanliness be next to godliness, he certainly has much to recommend him. Every village has its bath, if there is any chance for one, and men, women, and children patronize it liberally. Should the situation of a town be unfortunate in this

particular, its people will carry water from a great distance if necessary, and in any event will keep clean.

Hardly less noticeable than the almost universal hospitality are the well-regulated homes and the happy family life which one soon finds to be the rule. Children are orderly, respectful, and obedient to their parents. Wives are allowed an amount of liberty hardly equaled in any other Eastern country, and they seldom abuse it. * * *

The native is self-respecting and self-restrained to a remarkable degree. He is patient under misfortune and forbearing under provocation. While it is stretching the truth to say that he never reveals anger, he certainly succeeds much better in controlling himself than does the average European. When he does give way to passion, however, he is as likely as not to become for the moment a maniac, and to do some one a fatal injury. He is a kind father and a dutiful son. His aged relatives are never left in want, but are brought to his home and are welcome to share the best that it affords to the end of their days. Among his fellows he is genial and sociable. He loves to sing, dance, and make merry. He is a born musician, and considering the sort of instruments, and especially the limited advantages which he has for perfecting himself in their use, his performances on them are often remarkable. He is naturally fearless, and admires nothing so much as bravery in others. Under good officers he makes an excellent soldier, and he is ready to fight to the death for his honor or his home. * * *

Mr. John Foreman, who resided in the Philippines for a number of years, in his book "The Philippine Islands," published in London in 1899, writes as follows:

Several writers have essayed to correctly depict the Philippine native character, but with only partial success. Dealing with such an anomalism, the most eminent physiognomists would surely differ in their speculations regarding the Philippine native of the present day. That Catonian figure, with placid countenance and solemn gravity of feature, would readily deceive anyone as to the true mental organism within. The late parish priest of Alaminos, in Batangas province—a Spanish Franciscan friar, who spent half his life in the colony—left a brief manuscript essay on the native character. I have read it. In his opinion, the native is an incomprehensible phenomenon, the mainspring of whose line of thought and the guiding motive of whose actions have never yet been, and perhaps never will be, discovered. A native will serve a master satisfactorily for years, and then suddenly abscond, or commit some such hideous crime as conniving with a brigand band to murder the family and pillage the house. * * *

He is fond of gambling, profligate, lavish in his promises, but lâche in the extreme as to their fulfillment. He will never come frankly forward to make a clean breast of a fault committed or even a pardonable accident, but will hide it until it is found out. In common with many other non-European races, an act of generosity or a voluntary concession of justice is regarded as a sign of weakness. Hence it is that the experienced European is often compelled to be more harsh than his own nature dictates. * * * If one pays a native 20 cents for a service performed, and that be exactly the customary remuneration, he will say nothing, but if a feeling of compassion impels one to pay 30 cents, the recipient will loudly protest that he ought to be paid more. * * * If the native be in want of a trivial thing, which by plain asking he could readily obtain, he will come with a long tale, often begin by telling a lie, and whilst he invariably scratches his head, he will beat about the bush until he comes to the point with a supplicating tone and a saintly countenance hiding a mass of falsity. * * * Even the best class of natives neither appreciate nor feel grateful for, nor even seem to understand, a spontaneous gift. Apparently they only comprehend the favor when one yields to their asking. The lowest class never give to each other, unsolicited, a

cent's worth. If an European makes voluntary gratuities to the natives, he is considered a fool—they entertain a contempt for him, which develops into intolerable impertinence. * * *

When a native steals (and I must say they are fairly honest), he steals only what he needs. One of the rudest acts according to their social code is to step over a person asleep on the floor. Sleeping is with them a very solemn matter. They are very averse to awaking anyone, the idea being that during sleep the soul is absent from the body, and that if slumber be suddenly arrested, the soul might not have time to return. A person knowing the habits of the native, when he calls upon him and is told "He is asleep," does not inquire further. The rest is understood—that he may have to wait an indefinite time until the sleeper wakes up; so he may as well depart. * * *

The reasoning of a native and a European differs so largely that the mental impulse of the two races is ever clashing. With the majority no number of years of genial intercourse without material profit will arouse in the native breast a perceptible sympathy for the white race. Exceptions to this rule are always appreciated. The Visayan native in particular exhibits a frigid stoicism. He bears his own misfortunes unmoved, and would look on another in imminent danger with solemn indifference.

Wherever I have been in the whole archipelago—near the capital or 500 miles from it—I have found mothers teaching their offspring to regard the European as a demoniacal being, an evil spirit, or at least as an enemy to be feared. If a child cries, it is hushed by the exclamation, "Castile!" (European). * * *

The Filipino, like most Orientals, is a good imitator, but having no initiative genius he is not efficient in anything. If you give him a model, he will copy it any number of times, but you can not get him to make two copies so much alike that the one is indistinguishable from the other. He has no attachment for any occupation in particular. To-day he will be at the plow, to-morrow a coachman, a collector of accounts, a valet, a sailor, and so on, or he will suddenly renounce social trammels in pursuit of lawless vagabondage. * * *

The native is indolent in the extreme and never tires of sitting still gazing at nothing in particular. He will do no regular work without an advance; his word can not be depended upon; he is fertile in exculpatory devices; he is momentarily obedient, but is averse to subjection. He feigns friendship, but has no loyalty; he is calm and silent, but can keep no secret; he is daring on the spur of the moment, but fails in resolution if he reflects; he is wantonly unfeeling toward animals, cruel to a fallen foe, but fond of his children. If familiarity be permitted with a native, there is no limit to his audacity. The Tagálog is docile, but keenly resents an injustice.

Native superstition and facile credulity are easily imposed upon. A report emitted in jest or in earnest travels with alarming rapidity, and the consequences have not infrequently been serious. He rarely sees a joke and still more rarely makes one. He never reveals anger, but he will, with the most profound calmness, avenge himself, awaiting patiently the opportunity to use his bowie knife with effect. Mutilation of a vanquished enemy is common among these islanders. If he recognizes a fault by his own conscience, he will receive a flogging without resentment or complaint; if he is not so convinced of the misdeed, he will await his chance to give vent to his rancor. He has a profound respect only for the elders of his household and the lash justly administered. * * *

Families are very united, and claims for help and protection are admitted, however distant the relationship may be. * * * The native is a good father and a good husband, unreasonably jealous of his wife, careless of the honor of his daughter, and will take no heed of the indiscretions of his spouse committed before marriage. Cases have been known of natives having fled from their burning huts, taking care

to save their fighting cocks, but leaving their wives and children to look after themselves. * * *

If a question be suddenly put to a native, he apparently loses his presence of mind and gives a reply most convenient to himself to save himself from trouble, punishment, or reproach. It is a matter of perfect indifference to him whether the reply be true or not. Then as the investigation proceeds he will amend one statement after another, until finally he has practically admitted his first explanation to be quite false. One who knows the native character, so far as its mysteries are penetrable, would never attempt to get at the truth of a question by a direct inquiry. He would "beat about the bush," and extract the truth bit by bit. Nor do the natives, rich or poor, of any class in life, and with very few exceptions in the whole population, appear to regard lying as a sin, but rather as a legitimate though cunning convenience, which should be resorted to whenever it will serve a purpose. It is my frank opinion that they do not, in their consciences, hold lying to be a fault in any degree. If the liar be discovered and faced, he rarely appears disconcerted. His countenance rather denotes surprise at the discovery or disappointment at his being foiled in the object for which he lied. As this is one of the most remarkable characteristics of the natives of both sexes in all spheres of life, I have repeatedly discussed it with the priests, several of whom have assured me that the habit prevails even in the confessional.

The native is so contumacious to all bidding, so averse to social order, that he can only be ruled by coercion or by the demonstration of force. Men and women alike find exaggerated enjoyment in litigation, which may keep up for years. Among themselves they are tyrannical. They have no real sentiment, honor, or magnanimity, and apart from their hospitality, in which they (especially the Tagálogs) far excel the Europeans, all their actions appear to be guided only by fear, interest, or both. * * *

But the Filipino has many excellent qualities which go far to make amends for his shortcomings. He is patient and forbearing in the extreme, sober, plodding, anxious only about providing for his immediate wants, and seldom feels "the canker of ambitious thoughts." In his person and his dwelling he may serve as a pattern of cleanliness to all other races in the tropical East. He has little thought beyond the morrow, and therefore he never racks his brains about events of the far future in the political world or any other sphere. He indifferently leaves everything to happen as it may, with surprising resignation.

The Tagálog in particular has a genial, social nature. The native, in general, will go without food for many hours at a time without grumbling; and fish, rice, betel nut, and tobacco are his chief wants.

When an European is traveling, he never needs to trouble about where or when his servant gets his food or where he sleeps; he looks after that. When a native travels, he drops in among any group of his fellow-countrymen whom he finds having their meal on the roadside, and wherever he happens to be at nightfall there he lies down to sleep. He is never long in a great dilemma. If his hut is about to fall, he makes it fast with bamboo and rattan cane. If a vehicle breaks down, a harness snaps, or his canoe leaks or upsets, he has always his remedy at hand. He bears misfortune of all kinds with the greatest indifference and without the least apparent emotion. Under the eye of his master he is the most tractable of all beings. * * *

The native has no idea of organization on a large scale, hence a successful revolution is not possible if confined to the purely indigenous population unaided by others, such as creoles and foreigners. He is brave and fears no consequences when with or against his equals, or if led by his superiors, but a conviction of superiority, moral

or physical, in the adversary depresses him. An excess of audacity calms and overawes rather than irritates him.

His admiration for bravery and perilous boldness is only equaled by his contempt for cowardice and puerility, and this is really the secret of the native's disdain for the Chinese race. Under good European officers they make excellent soldiers; however, if the leader should fall they would at once become demoralized. There is nothing they delight in more than pillage, destruction, and bloodshed, and when once they become masters of the situation in an affray there is no limit to their greed and savage cruelty. * * *

The natives have an inherent passion for music. Musicians are to be found in every village, and even among the very poorest classes. There was scarcely a parish without its orchestra, and this natural taste was laudably encouraged by the priests. Some of these bands acquired great local fame and were sought for whenever there was a feast miles away. The players seemed to enjoy it as much as the listeners and they would keep at it for hours at a time, as long as their bodily strength lasted. Girls from 6 years of age learn to play the harp almost by instinct, and college girls quickly learn the piano. There is an absence of sentimental feeling in the execution of set music (which is all European), and this is the only drawback to their becoming fine instrumentalists. For the same reason classical music is very little in vogue among the Philippine people, who prefer dance pieces and ballad accompaniments. * * *

Frederic H. Sawyer, a civil engineer who resided in the Philippines fourteen years, in his book "The Inhabitants of the Philippines," published in London in 1900, writes as follows:

The Filipino possesses a great deal of self-respect, and his demeanor is quiet and decorous. He is polite to others and expects to be treated politely himself. He is averse to rowdyism or horseplay of any kind and avoids giving offense. * * * For an inhabitant of the Tropics he is fairly industrious, sometimes even very hard working. Those who have seen him poling cascos against the stream of the Pásig will admit this. He is a keen sportsman, and will readily put his money on his favorite horse or gamecock; he is also addicted to other forms of gambling. The position taken by women in a community is often considered as a test of the degree of civilization it has attained. Measured by this standard the Filipinos come out well, for among them the wife exerts great influence in the family, and the husband rarely completes any important business without her concurrence.

The Filipinos treat their children with great kindness and forbearance. Those who are well off show much anxiety to secure a good education for their sons, and even for their daughters. Parental authority extends to the latest period in life. I have seen a man of 50 years come as respectfully as a child to kiss the hands of his aged parents when the vesper bell sounded, and this notwithstanding the presence of several European visitors in the house. Children, in return, show great respect to both parents, and come morning and evening to kiss their hands. * * * They are trained in good manners from their earliest youth, both by precept and example. * * *

The sense of personal dignity and self-respect, the dominant feeling in the Malay nature, is shown in the Filipinos by a general cleanliness in their persons and clothing. They usually live near water, and nearly all of them can swim. * * * The Filipino is extremely superstitious, and like his kinsman, the Dayak, he is a believer in omens, although he has not reduced them so completely to a system, and three centuries of Christianity have diverted his superstitions into other channels. In his mind each cave, each ravine, each mountain, each pool, each stream has its guardian spirit, to offend or to startle which may be dangerous. These are the jinni of southern Arabia and Socotra. * * * A Filipino woman sometimes wears as many as three

of these scapularies hung from silk threads round her neck and covered by her upper garment. They usually dispose two in front, where they conceive the danger is greatest, and one on the back as a further precaution against an attack from the rear. Wearing these holy amulets, and having crossed herself and uttered a prayer before coming downstairs in the morning, the Filipino wife or maid feels that she has done all she can and that if any backsliding should occur during the day, it will not be her fault. She believes greatly in lucky or holy numbers. * * *

Among the many witnesses who appeared before the Schurmann Philippine Commission in 1899, the following gave testimony as to certain Filipino characteristics:

Dr. Manuel Xerez, chief of the bureau of statistics, a native Filipino, stated that, "Ordinarily the native Filipino, because he has been under the influence of the friar for a long time, is stoical. They are fond of work up to a certain point. They will work as long as it is necessary to gain a livelihood. They have not yet learned to save what they earn by their work, for they have always been obliged, whenever they had any money, to give it to the church, and in this way they have become indifferent to saving. The imagination of the Indian, when he talks in his own language, may be easily seen to be very active and easily aroused, considering the small amount of education he has. On account of the education in fanaticism which they have received they regard life as a transitory state, and they are indifferent to death. It is not that they are brave, but that they think that in the next world they will enjoy a better life than here. Watching the death of a field laborer in the Philippines is like watching the death of a saint, for although he may be suffering very intensely he dies quietly, trusting in God."

In referring to the subject of ridicule and the sensitiveness of the Filipino, he said:

The Filipino, as a general thing, is very fond of imitating the people whom he believes to be his superiors in culture; and as they are fond of culture they are desirous of obtaining it. When a priest met a man who had any education, any culture at all, in towns where there was very little culture, and got him before a great many people, he would say: "Oh, you are a Spaniard now, I suppose. You will very soon be a Protestant and a heretic, and soon you will be excommunicated," and of course it exposed the man to great shame. And the friar would say, "You are a very ugly person to try to imitate the Spaniards; you are more like a monkey, and you have no right to try and separate yourself from the carabaos." A friar wrote a novel which caused a great deal of hatred toward the friars. In this novel he said that the Filipinos and the carabaos were brothers and should never be separated; and he also said that it was useless for the Filipinos to try to educate themselves—that their intelligence was not sufficient to enable them to learn anything that was scientific, lofty, or cultivated.

Maj. Frank S. Bourns, surgeon of volunteers, who was at the head of the health department, Manila, in 1899, in a statement to the Commission said that he first visited the Philippines with a large party for scientific zoology in August, 1887, remaining until July, 1888, and

again in September, 1890, remaining until December, 1892. He visited the islands of Luzón, Mindoro, Panay, Guimarás, Siquijor, Abú, Sámar, Masbate, Marinduque, Mindanao, Basilan, Paragua, the Tawi Tawi, Siassi and Joló groups, the Calamianes, and Cagayán de Sulu. In all these islands he carried on his work as zoologist, visiting many localities and being brought into contact with almost every element among the people, the better and more intelligent ones in the towns and the poorer people of the country, as well as the savages of the interior. He found the people quite friendly, even in places considered dangerous by the Spaniards, who advised him not to go. But he thought that as he was English speaking he could go anywhere, as long as he observed the policy of kind and just dealing with the natives. During the early days of American occupation he was employed in various capacities and established a spy system, coming into contact with all kinds of natives, whose confidence he gained through his knowledge of the languages and his method of treatment. In regard to the general character of the Filipinos, based entirely on his personal observation, he stated:

> The great masses of the people here are ignorant. They have a very vague idea either of independence or liberty as such. I think it is more or less a matter of indifference to them what their government is, so long as it is not oppressive, so long as it allows them to pursue their daily work undisturbed, and to support their families. * * * I believe that they are capable of very great advancement. The race is quick to learn and has fairly good natural ability, but such a class will have to be educated before great responsibility can be placed in its hands. * * * My idea in regard to the employment of the Filipinos here is that if they had associated with them a sufficient number of Americans who are honorable and upright in their dealings, there would be a very strong tendency on the part of the Filipinos to do as their colleagues do. They are natural imitators; it is a racial characteristic and, in my opinion, if they saw that their chief or their colleagues were not just in his or their administration and were not entirely honest, there would be a tendency to follow in his or their footsteps. This applies not only to officers of equal standing, but always with greater force to subordinates in the different departments.

Maj. Gen. Arthur MacArthur, military governor of the Philippines, in his annual reports of 1900 and 1901 said:

> The Filipinos are not a warlike or ferocious people. Left to themselves, a large number (perhaps a considerable majority) would gladly accept American supremacy which, they are gradually coming to understand, means individual liberty and absolute security in their lives and property. * * * They are intelligent, generous, and flexible. * * *

Mr. Angel Fabi, captain of the port in the island of Mindoro, under Aguinaldo, said:

> By and by you will succeed and the Filipinos will be more American than the Americans. They are a peaceful people, easily governed, but you must never allow the people to think the government is afraid. The Filipinos have no political opinions, and they get all their ideas from their leaders. * * *

Rev. Homer C. Stuntz, a Methodist minister of the gospel, who arrived in the Philippines in April, 1901, in his book on the Philippines, published in 1904, writes as follows:

Among the unfavorable characteristics of the Filipino people their critics name untrustworthiness, indolence, ingratitude, and cruelty. In a greater or less degree these charges have, unfortunately, too much foundation in the admitted facts of daily life to allow even their warmest admirers to enter a general denial. Admission of some truth in these hard accusations, and such explanations and qualifications as the case will permit, is the only frank and honorable course. * * * Untrustworthiness, let us remember, is a fault met with among all nations. If Filipinos have a larger share of this unlovely trait than other peoples, let it be remembered that comparative savagery is but three centuries off, and that such has been the reign of injustice and blind force under which they have lived that deception was their only defense against merciless oppression. Let it be remembered, also, that even the teaching of their spiritual guides puts no severe ban upon deceit. * * * The experience of the Filipino people could not have been better adapted to encourage untruthfulness on a wide scale. * * * Indolence is a fact of Filipino life that especially grates upon Americans. * * * There can be no evasion of the fact. * * * Qualifications and explanations of these wholesale statements can readily be found, but not of sufficient number or weight entirely to break their force. Many Filipinos are models of industry. * * *

As to other indictments—ingratitude, cruelty, and the like—they are not so serious, nor so readily proven. * * * The passion for gambling is a serious fault in the Filipino character. After two years in the islands I am convinced that gambling is the worst vice of the country. The natives do not drink to excess, but as a people they are victims to this baleful habit. I have known men to pay 200 per cent interest for money with which to back a favorite gamecock. They will stake their last bit of property, and even wager their children or their wives, so mad is their infatuation. * * * Favorable characteristics are many. The Filipino people are polite. It is innate. Not Persians nor Japanese have more instinctive graciousness. Some one has said:

> Politeness is to do and say
> The kindest thing in the kindest way;

and by this definition the population of these islands ranks high among the people of the earth. This charm of manner, this suave self-effacement in public places, is in marked contrast with the self-assertiveness seen among our people. After a year or so in the Philippines, the manners, or lack of them, on our street cars and in places of public resort strike one as rude and boorish in the extreme.

Hospitality is a strong point in the native character. There is not a hotel in the Philippines that caters to the Filipino trade. Manila, with well toward 300,000 people, has no such hostelry. It is not needed. Everyone who comes to the city stops with "*parientes*," or relatives; with "*amigos*," or friends. Nothing else is thought of as a possibility. In all my trips into the provinces I have shared in a hospitality which spared nothing from basket, or store, or garden, or house accommodations in the effort to make me feel perfectly welcome to all that the home afforded.

Loyalty to family ties is another praiseworthy characteristic of the Filipino that is well-nigh universal. There are no poorhouses in these islands. None are needed. * * * Somewhere in the circle of relationship every dependent person is made welcome to a share of such provision as can be supplied, and to a corner in the house, no matter how crowded, and in all this there is no making of wry faces as though

it were a hardship. It is recognized as a duty that prosperous relatives owe to their own kin who have not succeeded so well in the battle for home and bread, and even to drones in the family hive.

Capacity for culture is abundantly proven to belong to all branches of the population. While their gifts show to better advantage in studies in which memory and imitation are called into play, yet proofs are not wanting that in the sciences and professions they can take high rank. * * *

All competent observers have remarked that the Filipinos have a natural aptitude for instruction, the children being mentally quick. * * *

Filipinos are very fond of music. Nearly every home has some instrument, and some member of the family can play it. * * * Some of the performances of Filipino orchestras and bands are equal to anything one hears in America or Europe.

To the Taft Philippine Commission the bishop of Jaro, an Augustinian friar who had lived in the Philippines about twenty-two years, said in regard to the Visayans as compared with the Tagálogs:

More pacific and quiet, they are more humble and submissive. One of the proofs of that is that all of the Tagálogs that go from here immediately impose on the people and get the best out of them. * * *

I believe the Visayans are less addicted to work even than the Tagálogs, because they have everything at hand and nothing calling for work. Nevertheless, in those places where progress demands more needs they are working very well, and in the twenty-two years I have lived here the advance in agriculture has been very great. I think they are capable of being trained to work. * * * They are skillful mechanics for imitative purposes. Initiative they have none. Even in agriculture they do not evolve anything themselves. * * *

As servants they are pilferers. Here, for instance, the Ilocanos are considered as good servants and others as bad servants; but speaking broadly, they are all the same. Those who have been nearer to the priests have learned to be a little more honest. The Ilocanos make better servants; they are better morally, and they will stick to a place longer. * * * In industry, in fidelity, and in morality the Ilocanos are the best. * * *

They are all spendthrifts. * * * They do not save their money at all. Above all, they gamble. They spend it on jewelry; fine diamonds they cannot resist, also disorderly living. * * *

The children are quick to learn, generally speaking. They have an extraordinary capacity for learning a foreign language—Spanish at first, and now English. * * *

Archbishop Nozaleda, who had resided in the Philippines about twenty-six years, when asked if he had observed the character of the Tagálogs and the other races in the islands, replied as follows:

Naturally, because one living in the Philippines would notice the differences which exist between the different races; * * * as they come in closer contact with the people they will appreciate the differences. They are what might be termed more essentially differences in trait and character than "zoological" differences. The same differences that exist between the white and the black races are not observed among these people.

They are a bright race in learning, * * * and they lend themselves to education. They learn languages with very little difficulty. They never learn them profoundly or philosophically, but for social purposes and conversation they are very apt, very quick to learn. * * * They are a rather light-hearted race, easily affected by pleasure, dancing, and music. They differ greatly from the European race in that

innate feeling which moves Europeans. They are more impelled by extraneous influences than by innate feeling or impulse. * * * I have seen nearly all the Malayan race, and I do not know of any race existing which is more responsive to its surroundings. There being no proper individuality, if they live in good surroundings they will be good and if they live in bad surroundings they will be bad. * * *

There is an absolute want of character. They can not grasp an idea and by their own mental effort determine whether it is proper or improper. * * * They have just sufficient of the logical faculty to be rational beings. * * * They have not sufficient mental capacity to digest any abstract question. * * * They lack practicability.

They could hardly be called an artistic race, except in a very limited degree. They can not devise anything themselves, but in imitation they are very good. They have a marvelous faculty for retaining music, and they are very responsive to music, but originality in the creation of music they have none. * * * They have a prodigious memory, but the majority play by ear. This prodigious memory is noticeable in other things as well as music. * * * I have had students, sacerdotal students, who could take a book and learn it from beginning to end and repeat it like a parrot and not know one word of what it meant. In that they are marvelous. * * *

On the outside they are imperturbable, but it is affected. It is not what it seems. That is one great error into which those who observe them are likely to fall—to be led by that imperturbability to imagine that they are valiant, that they have stamina, when they have not. * * * Their affection for their children is more that of the animal than human. It is very expressive, the same as an animal, but even then, to show that it partakes more of the animal than the human, they sometimes become ferocious and go to extremes that only animals would go to in the treatment of their offspring. There is absolutely no sincerity in their friendship and they have no pity. * * *

In times gone by, prior to the revolution of 1896, the mass of the people had a simplicity that was really enchanting. One could travel around without a guard into the provinces and go through an immense lot of people, and they would always receive him with open arms. * * * They are a very pusillanimous race. There have been cases where a man has died of fright. It could not be otherwise, for look at what they live on. * * * The woman is better than the man here in every way—in intelligence, in virtue, and in labor—and a great deal more economical. If any rights or privileges are to be granted to the natives, do not give them to the men, but to the women. * * * Why, even in the fields it is the women who do the work. * * * The woman is the one who supports the man here; so every law of justice demands that even in political life they should have the privilege over the men. You have to conform to nature. I must render just tribute to the American Army here. I have noticed all along the consideration they have had for the women. It is worthy of comment.

The bishop of Vigan, a Dominican friar who had lived in the Philippines about ten years, when asked whether or not the Ilocanos are a better race than the Tagálogs, replied as follows:

They are; and much more saving, more economical, more industrious. * * * They don't work too much, but they work more than the Tagálogs. They won't die working. Generally they are more honest than the Tagálogs. In Cagayán and the Iloco provinces they are very submissive. * * *

The natives are always prone to abuse their authority. If some one here is not above them they will abuse their authority all the time. * * * They are terrible to their own people—very tyrants. The presidentes of towns who are natives themselves hold their subordinates in terror. They govern by fear here. * * *

They are a jealous race; the Ilocanos are the worst. They become absolutely insane, and they are never satisfied till they kill the party. * * *

Mr. Ramón Reyes Lala, a prominent native of Manila, has given the following description of his own race:

The first thing in the native character that impresses the traveler is his impassive demeanor and imperturbable bearing. He is a born stoic, a fatalist by nature. This accounts for his coolness in moments of danger, and his intrepid daring against overwhelming odds. This feature of the Malay character has often been displayed in the conflicts of the race with the Europeans in the East Indies. Under competent leadership the native, though strongly averse to discipline, can be made a splendid soldier. As sailors, too, I do not believe they can be equaled. For, lithe, active, and fond of the water, the Malays have ever shown their inclination for the sea. * * * They are all excellent swimmers and are absolutely fearless in the water.

As a result of the stoicism of the native character, he never bewails a misfortune and has no fear of death. When anything happens he merely says it is fate, and calmly goes about his business as if nothing had happened. Europeans often seem to notice in them what they deem a lack of sympathy for the misfortunes of others, but it is not this so much as resignation to the inevitable. This, it must be confessed, saves them many a bitter pang. The educated native, however, impregnated with the better philosophy of the civilized world, is by no means so imperturbable. While more keenly alive to the sufferings of others, he is also more sensitive to his own sorrows. After all, whether he is any happier for his wisdom is a question.

Incomprehensible inconsistencies obtain in nearly every native. Students of character may, therefore, study the Filipinos for years and yet, at last, have no definite impression of their mental or moral status. Of course, those living in the cities are less baffling to the physiognomist and ethnologist, for endemic peculiarities have been rubbed off or so modified that the racial traits are not obvious. * * *

All travelers unite in attributing to the natives extreme family affection. They are very fond of their children, who, as a rule, are respectful and well behaved. The noisy little hoodlums of European and American cities are utterly unknown. The old are tenderly cared for, and are venerated; while in almost every well-to-do household are one or two poor relatives, who, while mere hangers-on, are nevertheless always made welcome to the table of their host. Indeed, the hospitality of the Filipino is proverbial. A guest is always welcome, and welcome to the best. The better class, too, gladly embrace every opportunity to feast their neighbors or the stranger within their gates.

As a rule, the people are superstitious and very credulous; but how could they be otherwise? For three hundred years they have been denied even the liberty of investigation, when no light, save the dim glimmer of priestcraft, pierced the utter darkness of their lot. Those that have been educated, however, have proved apt converts—only too apt, say the priests and the Spaniards—to the conclusions of science and of modern research.

The native is rarely humorous and seldom witty. He is not easily moved to anger, and when angry does not often show it. When he does, like the Malay of Java, he is prone to lose all control of himself, and with destructive energy slays all in his path. This is infrequent, however, but is a contingency that may occur at any time.

If a native has been unjustly punished, he will never forget it, but will treasure the memory of his wrong until a good opportunity for revenge presents itself.

Like all courageous people, he despises cowardice and pusillanimity. He has, therefore, little regard for the meek and humble Chinaman, who will pocket an insult rather than avenge himself. He greatly esteems the European, who is possessed of the qualities that he admires, and will follow him into the very jaws of death. He is

easily awed by a demonstration of superior force, and is ruled best by mild but firm coercion, based upon justice. He is not often ambitious, save socially and to make some display, being fond of ceremony and of the pomp and glitter of a procession. He is sober, patient, and always clean. This can be said of few peoples. He easily adjusts himself to new conditions, and will soon make the best of his surroundings. As a servant he is honest, obedient, and will do as he is told.

It must be said that they enjoy litigation more than is good for them or for the best interests of the colony. There must be some psychological reason for this. It doubtless gives some play to the subtlety of the Oriental mind. It is said that he lacks the sense of initiative; and to some extent this may be true. The recent conduct of Aguinaldo—a full-blooded native—proves, notwithstanding, that he is not wholly deficient in aggressiveness nor in organizing power.

Though not as artistic as the Japanese, the Filipinos have shown many evidences of art talent. This is seen in the embroidery of the women, as well as in the work of the native painters and sculptors. Some of these have been honored with high prizes at the art exhibition in Madrid. I remember particularly the brothers Luna. One was educated in Spain and there distinguished by his remarkable talent with the brush; the other known for his wonderful virtuosity. Moreover, in nothing are the Filipinos so proficient as in music. Every village has its orchestra, and in the evening the whole district turns out to enjoy its playing. All the people are, in fact, born musicians; even little boys and girls of 5 or 6 years play the harp, the guitar, or the piano as if by instinct; while their elders show a proficiency that, when their opportunities are considered, is truly astonishing. The clergy, appreciating that music is the foe of vice and a promoter of virtue, have wisely encouraged the natives in this art. It is now taught in all the higher schools in the colony. At the many feasts, religious and secular, which are the delight of the natives, music is always the most enjoyable feature, the bands playing for hours together, both performers and listeners being so engrossed as to be wholly unconscious of the lapse of time.

Dr. David P. Barrows, general superintendent of education and formerly at the head of the Bureau of Non-Christian Tribes, who has had a wide experience with the Filipinos, in testifying before the Senate Philippine Committee, 1902, said:

We find in the Philippine Islands, in my own observation, at the present time two generally large elements, one of which is commonly known as the *gente ilustrada*, which is the cultivated class, and the other is the *gente baja*, or the subordinate class. * * *

If you go into a town of ten or twelve thousand people you will meet perhaps with a dozen, and generally less, families who represent the dominant social element there, who are cultivated, who have received some Spanish education, who have wealth, social position, and who are commonly represented as being the type of the Filipino people. They are a type, but they are only one type. * * * The dominant element have wealth, they live in handsome houses, and they have very great social influence. * * *

My observation, speaking about the historical condition, is that they are directly descended, or at least their social prestige is a direct inheritance, from the conditions which the Spaniards found there three hundred years ago. * * * The rest are a population who have no education, who have no wealth, and who are controlled economically and socially by the upper class, or, as it is called, the *gente ilustrada*—the illustrious class. * * * This upper class is very ambitious. That is one of its first qualities, I think, that strikes one. They are keenly ambitious—ambitious for education, ambitious for participation in the political affairs of the islands. They are willing to make large sacrifices in order to secure what we must all, I think,

GOV-SUPERVISOR ORTEGA AND PRESIDENTES, PROVINCE OF LA UNIÓN (ILOCANOS).

regard as a legitimate field for their aspirations. They are exceedingly hospitable; they are an exceedingly pleasing people; they will entertain you, not only royally, but with sincere hospitality. They are among the most charming people I have ever met. I think they will compare favorably with the similar class in Japan, at least in the matter of intellectual qualities. * * * I think the feeling of this class, which is really the only class we have to consider, has undergone several changes since American occupation.

The following are from certain of the census supervisors.

Governor-supervisor, province of La Unión (Ilocanos):

The Ilocanos are of medium height, brown color, fair constitution, and they enjoy good health as a rule; have healthy customs, are moral and honest, chastity and love of home predominating among them, and notwithstanding the fact that they are submissive, obedient, and of a timid character, they would commit crime when offended in their honor, and when they do not find any more satisfactory vindication for conjugal infidelity, then the death of the offender and of the faithless one at the hand of the offended.

The superstitions of the inhabitants of this section may be reduced to two, which are the commonest, the "*alalia*" and the "*pugot.*" The alalia consists in the belief in the appearance of the dead to the living, especially to the members of their families or nearest relatives, or persons of more or less intimate friendship with the deceased. These apparitions appear within nine days after the death, especially on the third night after the occurrence. The pugot consists in the appearance in dark places, and in large and uninhabited buildings, or those in a ruinous state, of evil spirits in different shapes, either in human but gigantic form or in the form of animals, such as dogs, hogs, etc.

Governor-supervisor, province of Ilocos Sur (Ilocanos):

The customs of the natives in their manner of dressing, eating, and bearing are very simple, and in general they are very docile and obedient to the constituted authorities, and so timid that, although they suffer vexations from the persons who exercise some authority in their towns, they seldom complain.

Like all nations in the world, they also have many and varied superstitions; among them may be mentioned the fact that they do not take a bath, marry, or start on a voyage on Tuesdays. The raven is a bird of ill omen, and when the raven croaks, it is a sign of some misfortune; a gambler when he meets on his way to the gambling house a woman, returns, because he believes it is a sign of bad luck, etc.

Governor-supervisor, province of Cagayán (Cagayanes, Ilocanos):

The customs of the inhabitants of this province are temperate, they are obedient to the authorities, and their character is pacific, hospitable, and moderate and frugal in food and drink.

The superstitions which were formerly observed in almost all the towns, and which exist, are that when a member of the family falls ill he calls a quack doctor, who begins to investigate where he has been and where he went before he arrived at his house, and if he has taken the disease in the field where he was plowing, the prescription will be that an animal belonging to the sick person be sacrificed, the kind of animal being according to his means, usually a carabao if wealthy, a fat hog if in fair circumstances, or a fighting cock or hen; if it be a carabao, the head, uncooked, is taken on a plate and left in the middle of the field where the sick person fell ill, together with a large rice cake, milk of the coconut, and sugar, which is known as "*deco*" in this province, and "*bebinca*" in Tagálog, a bottle of sugar cane spirits, known as "*basi,*" one or two bunches of cigars, and a few dozen betels, and

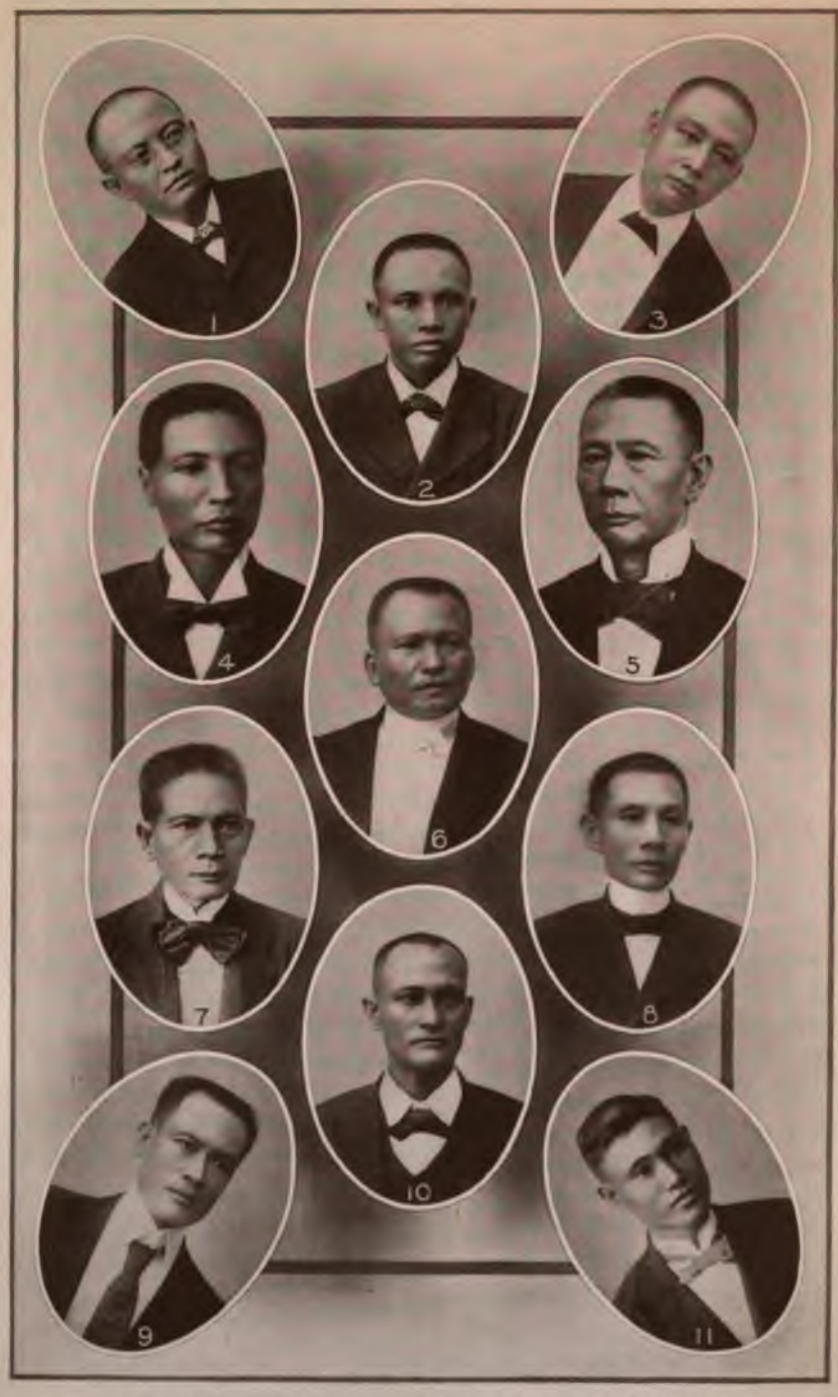
the wife, children, and relatives of the sick person pray to the "*annani*" spirit to pardon the sick person if he disturbed his tranquillity by plowing the field, as he did not know that he was resting there, and at the same time pray for the health of the sick person. In the house of the latter, as is natural, a large feast would be held in honor of the cattle killed, the meat of which is mostly taken by the quack doctor in payment of his fees; sometimes the latter would apply the liver of the animal to the painful part as a plaster. If the sick person is not cured after three days or a week, he is baptized with another name; if he is cured, then he is called by his new name, the belief being that the saint of the last name has more power to cure disease than the saint of the first name of the patient. If the patient should not be cured a week after the second baptism, he is taken to another house, that of a relative or friend. This transfer must take place at night, when there is no moonlight, the patient being placed in a hammock made of rattan, with a loop at either end, through which a strong bamboo section is passed and carried on the shoulders of four men, two in front and two behind. The patient is escorted by four or six members of the family, who march in order on either side of the hammock, with large bare bolos. The hammock leaves the house well covered with blankets and is not uncovered until it is within the house to which the patient is transferred. The transfer takes place at night so that the annani shall not find out that the patient has left, and is escorted in the street to prevent the annanies from approaching the house. It should be noted that the persons acting as escort unsheath their bolos during the trip in order to frighten the evil spirits. Other quacks administer certain potions to their patients, but before the latter are permitted to drink it is necessary that a candle be lit before the image of a saint; that the sick person recite Our Father, the Ave María, and the Creed; but this prayer is not said in full, but only as far as the words "was crucified," when the patient takes the potion already prepared by the doctor. They also use an external medicine, consisting of some herb only known to them, which they rub over the patient from head to foot, beginning by making a cross on the crown of the head, then on the chest, then the unction follows all over the body to the accompaniment of a certain prayer.

Other quacks believe that the air which enters the human body is the cause of all diseases, and in order to extract this air they would massage the patient, but to prevent its entering the body of the quack at the time the latter gives the massage he forces himself to belch in order to eject the air which, having been extracted from the patient, penetrates the body of the quack. This treatment was often applied to persons suffering from fever. In cases of erysipelas and other cutaneous diseases there were male and female quacks who subjected the patient to the following treatment: They chewed the betel with certain herbs and spit the juice on the part affected. This treatment took place twice a day.

The natives of the province have a great aversion to the owl, and if one should happen to enter a house they would catch it and bury it at the foot of the staircase without killing it first, because if the owl should succeed in escaping from the house some misfortune would occur to its inmates, and if they should kill it while attempting to catch it, it was an omen that some member of the household was going to die. For this reason they would attempt to catch it alive and bury it in order to utilize its evil presage. When a black butterfly would enter a house it was considered an omen of the death of some relative or friend who did not live in that section; but the white or red butterfly, a pigeon, and other birds, excepting the owl and the raven, the boa constrictor, and the "*anay*" ant, were signs of good luck and wealth. The raven was looked upon with horror, being considered a bird of the devil.

They were of the belief that the souls of persons dying remained in this world and appeared in the form of ghosts and phantoms, called "*annani*" and "*aman mundo*" in the dialect of the province, and sometimes take human forms, appearing to their

PRESIDENTES, SPECIAL AGENTS OF THE CENSUS, PROVINCE OF CAGAYÁN.



PRESIDENTES, SPECIAL AGENTS OF THE CENSUS, PROVINCE OF CAGAYÁN.

relatives and friends, and other times introducing themselves into the bodies of relatives, speaking through the mouths of the latter, sometimes exhorting, censuring or advising, or disposing of the property they may have left.

With regard to the person into whom the spirit of some dead person introduces itself, he begins by suffering vertigo and cold sweats with great nervous excitement, loses consciousness, becomes stiff and cataleptic, in which condition he speaks, imitating the voice of the person of the spirit which has entered him, by which and by the matter treated of it is possible to ascertain who is the talking spirit. When he finishes talking he is covered with a black cloth which is used by widows and widowers and regains consciousness without having any idea of what he has said.

The Ilocanos from Ilocos Norte had another grave superstition, which was that if a dying person at the moment of expiring should extend a finger of his hand, it signified that he needed as many lives to save himself from hell as he had fingers extended; this indication was carried out by the relatives, who would murder persons for the purpose. This superstition was known under the name of "*sebrum*," which name is also given to the murders committed to comply with the supposed will of the deceased.

The Ilocanos had many more superstitions than the natives of Cagayán, as they had all those of the latter and their own as well, such as that of not placing the steps of a house facing the west; that no house already built should be enlarged toward the north; that when they go to the cock fighting or some gambling place if they meet a funeral they return because they would be sure to lose otherwise, doing so also if a snake crosses their path.

Among the Ilocanos, as well as the Cagayanes, the custom is not to sit down at a table to eat where there are already twelve guests, and when he should be the thirteenth; and if thirteen persons have already inadvertently sat down they will not eat when they notice it, nor continue if they have begun until another person shall sit down, making fourteen, or one of the thirteen rising, making twelve.

Governor-supervisor, province of Abra (Ilocanos, Tinguianes):

There are two classes in the population of the province, the Ilocanos, who form a population of 34,948; the Tinguianes, numbering 16,339, and Igorots, fugitive and nomadic, whom it has been impossible to enumerate, but who do not exceed 500. Without discussing as to whether they form one or more distinct races, which ethnology is charged with deciding, my report will only include the differences noted among them as to their manner of life.

These people differ among themselves in language, in religious belief, the manner of constituting the family, and disposal of the dead, the last being due to the different views they hold relative to the future life.

They are also distinguished by radical differences in their manner of dress, but all generally maintain themselves by agriculture and forest products, and, like everyone who lives by the sweat of his brow, are exempt from violent passions. Their mode of life is so simple, their character so affable, and their customs so temperate that it is exceptional to find among the real natives the falsity and double dealing which are born of a perverted instinct. They are, on the other hand, convinced by the experience of past years that the fertile soil, by diligent cultivation, will provide for their simple necessities; they are not dominated by the passion to accumulate wealth, nor by the vanity that would display it.

The number of the inhabitants of the province, compared with the possible means of existence and the amount of land, is capable of an increase equal to two-thirds of the present population.

Of the two people already described, the Tinguián is much more superstitious than the Ilocano, as the idolatrous worship of the former is composed of superstitious

GOV-SUPERVISOR RAMOS AND PRESIDENTES, PROVINCE OF TÁRLAC (TAGÁLOGS).

health some days afterwards, they attribute it to the virtue of the exorcism, but if he continues sick, they repeat the same operation, and if he does not recover, then they no longer attribute the disease to the influence of the devil, but to that of other spirits whom the patient may have unconsciously offended, and in order to placate them they perform the "*anito*," which consists in the killing of a chicken, which is boiled without salt, and when cooked they take it on a plate to the woods and leave it under a tree, together with a plate of cooked rice, called "*malagquit*," inviting the spirits to eat this substance offered them on behalf of the patient. They also believe in the "*mulam*," which means that some persons can communicate to others some disease, even without touching them or administering any substance injurious to the health, calling such persons "*mangcuculan*," who are generally an object of fear to the ignorant people.[1] The case occurred of a husband whose wife being ill, suspected that her disease was the effect of the "*mulam*," and calling the person he considered responsible therefor, he forced him to cure the patient, threatening him with death if he failed to do so; whereupon the reputed "*mangcuculan*" had recourse to the courts of justice, filing a complaint against the husband of the patient, accusing him of grave threats.

Some of the educated people also have superstitions, as, for example, the belief that it is dangerous to sit at a table with thirteen people, as it is said that one of the thirteen will die within a year after the occasion. These superstitions were brought by the Spaniards, with many others which it would take too long to mention.

The inhabitants of this province are, as a rule, in the habit of bathing often and, with some exceptions, always have their habitations clean.

Although there are some addicted to the use of intoxicating beverages, which are not in the majority, they never reach a point of intoxication where they make disturbances in the streets.

Governor-supervisor, province of Nueva Écija (Tagálogs, Ilocanos, Pampangans, Pangasinanes):

The manner of life of the population, as a rule, is pacific and to a certain extent timid and mistrustful, particularly in the northern towns. Their habits are temperate and simple, and they are quite superstitious and therefore easy victims to the sermons of demagogues and impostors. The population is, as a rule, for the present poor, due to the results of the war, the epizootic, cholera, locusts, and other public calamities.

The price of provisions is very high, being more than twice the price that obtained six years ago, the average living expenses of a family composed of four persons being $1 Mexican per day in the towns and barrios.

Governor-supervisor, province of Tárlac (Ilocanos):

The population of this province is quite heterogeneous, and it is difficult to make a report regarding their customs, manners of living, etc., being one of the newest of Luzón, the creation thereof dating back only to the second third of the past century. It is composed of townships ceded by the adjoining provinces, that of Pangasinán on the north, Pampanga on the south, Nueva Écija on the east, and the mountains of Zambales on the west, in which range, in Bambam, O'Donnell, Ooriones, Santa Ignacia, and Camfling are distributed in various settlements, a considerable number of Aetas or Negritos belonging to non-Christian tribes.

To the difference of origin of its inhabitants is due also the difference of the dialects they speak—Pampango by those of Pampanga, Pangasinán by those of said province,

[1] The cholera epidemic was attributed by many Filipinos to the Americans, who thus sought to kill them.—*Director.*

Tagálog by those of Nueva Écija, and Zambales by the Aetas and Negritos, and also Ilocano, by reason of the large contingent of families from the Ilocos provinces. Hence their customs and manners are all so different. The Tagálogs and Pampangans are relatively better educated and live in a more modern style than the Ilocanos, who as a general rule belong to poor families who have emigrated from their province in search of relative prosperity and who first established themselves here, working in the "*caingines*" or woods, and who, on account of their large number, may be said to form the low and uneducated class of this province. With regard to the Aetas or Negritos, who constitute the minority, they still inhabit the mountains and have their own religion, superstitions, and idolatrous beliefs.

The low class have also their superstitions, such as the belief in apparitions or ghosts, of good and evil spirits which have an influence for fortune or misfortune, the health or disease of men, thus producing that timidity which they instinctively feel when alone or in the dark, and that almost fatalistic character in regard to their life and interests.

As a rule the people are accustomed to cleanliness in their persons, and not a week passes without their bathing three or four times and changing clothing after the bath; but with regard to their homes, especially of those living in the country, they are so deficient that they are hardly a protection against the weather, and most of them are located in unhealthy spots.

The use of alcohol and other intoxicating beverages is not very general among the people; this can not be said of the betel, tobacco, smoking or chewing, as almost 70 per cent of the adults use the same, as well as the so-called "*basi*," consisting in the fermented juice of the sugar cane, to which the Ilocano people of this province are much addicted and which produces a stimulating or intoxicating effect if taken in large quantities.

The belief is general among them that the betel, chewing tobacco, and basi, used together or singly, tones up the stomach and makes them capable of resisting the effects of work and hunger, and this is so true that many of them eat only twice a day and do not fall ill or become weak, and it even appears that it preserves them from toothache.

Due to the very primitive customs of their inhabitants, family relations are very close—to such an extent that many, even though they have married sons or daughters, do not permit them to leave home, and are very sorry to part from them if they do, so that it may very frequently be observed that in one house there live the grandparents, children, sons-in-law or daughters-in-law and nephews; and due also to these patriarchal customs, the young girls are watched and advised by their near relatives, and it is a rare thing for any of them to commit any indiscretion, and when they are ready to marry they contract a legal marriage before a priest of their religion, and frequently without leaving the house of their parents or the bosom of their family by reason of such love. As a natural consequence of this general custom, illegitimate unions and, consequently, illegitimate births are insignificant in number, being, so to say, an exception to the rule.

Governor-supervisor, province of Bulacán (Tagálogs):

The character and habits of the population in general of this province may be described by the favorable statement that they have no common vices and that grave crimes do not occur with frequency, a character which reveals at once sobriety, honesty, and good customs, the superstitions which they formerly had having disappeared. Agriculture constitutes their principal source of wealth, although for some years past it has suffered, and although this province can not be called a wealthy one, it can not be placed in the class of the poor provinces. By reason of the new order of things, the price of food products has followed the fluctuations of the dollar,

everything costing double what it used to cost, and consequently the living expenses of a poor family, which are in the majority everywhere, averages 1½ pesos Mexican in the towns, and 1 peso in the barrios, per day.

Governor-supervisor, province of Pampanga (Pampangans):

The nationality represented by this province is very notable, with its special dialect, character, and even its physiognomy, notwithstanding its vicinity to Manila. Thus it is that since the history of Spanish colonization the Pampangans have surpassed all others; they have always preserved their strong character more than is usual among the natives, and even in the midst of rebellions they have shown considerable prudence, the disturbances occurring in other provinces not taking place here; their customs are peaceable, they are generous, hospitable, and much addicted to order and labor.

They are not free from the various and many superstitions which afflict people who, unfortunately, leave much to be desired in culture and education, especially if there be added thereto the religious fanaticisms which are so general among the masses. * * *

The Pampangans as a rule are clean in their persons and habitations, but this does not mean to say that they scrupulously observe the most rudimentary rules of hygiene.

In this province the use of intoxicating beverages is not prevalent, nor has it ever been.

The use of the betel mixture, composed of the leaf of the betel plant, oyster shell lime, and a piece of bonga, is very general, especially among the poorer class, and it may be said without exaggeration that more than half look upon the betel as a thing of supreme necessity as a tonic and astringent.

Governor-supervisor, province of Bataán (Tagálogs):

The population is of the Tagálog tribe, with a mixture of Pampangans in the towns bordering on Pampanga province. The people are of pure native blood, brown in color and of medium stature, there being so small a number of people in the entire province with a mixture of white or European blood that a percentage estimate can not be given; the number, indeed, is very small. The language spoken is Tagálog, only a few in each town being able to speak and write the Spanish language. Of the total number of municipal councilmen in the province only one-half are able to speak and write Spanish. Their manners and customs are about the same as the Tagálog people in other provinces. They are always hospitable, polite, and kind to each other and to strangers; are respectful to the authorities, and not inclined to acts in violation of the law. They are accustomed almost universally to the observance of the forms of worship of the Roman Catholic church, and, with one exception, have native priests in charge of all the churches. They seem to be satisfied with the Roman Catholic church, and those who discuss church doctrines seem to be opposed to new innovations or creeds. The church "*fiesta*" is observed by all the people, and is of frequent occurrence, during which time nearly all work and labor stops, and if it is the town fiesta it is difficult to secure laborers or other services for several days before and after the holiday. On these fiesta days the people devote themselves to worship, visiting, sports, dancing, and feasting.

The people seem to be attached to their homes, and very seldom change their residence to another town or province. They dress similar to the people in Manila, according to the wealth of the individual.

Governor-supervisor, province of Rizal (Tagálogs):

In general the inhabitants of this province are simple in their customs and habits, hospitable, not at all superstitious or perhaps very little, all of them professing Catholi-

cism to a fanatical degree, due to the deficient education which they have received herein from their former oppressors.

But later civilization came with its relative comforts and its natural requirements, and it is evident that the Filipino people, accommodating themselves to these new customs and making use of the perfect liberty which the new constitution permits, are endeavoring now to enter fully upon the course of progressive civilization, to which fact is due the formation or establishment of various private and religious associations.

There are two religious creeds in this province; the Aglipayan and reformed Protestantism, of the Methodist and Evangelist denominations. Both creeds hold religious meetings weekly, without it having been necessary for the authorities to interfere in any way up to the present time, which simple fact clearly shows the just and proper use which these residents are making of their rights.

Governor-supervisor, province of Batangas (Tagálogs):

The manners and customs of the natives of this province differ very little, if at all, from those of the other inhabitants of the archipelago, this being the case more especially with regard to the Tagálog provinces of Luzón.

As a rule, the Filipino of Batangas is very hospitable, moderate, sober, religious, and very much attached to the soil of his birth—characteristics which distinguish the race in general. Simplicity is also one of the most salient characteristics of the natives of this province. * * *

The inhabitants of this province are very much attached to the soil where they first saw light, and only emigrate to another section when obliged to do so by necessity; they very rarely do so for the sole purpose of improving their fortunes. The adventurous character which greatly distinguishes the whites, and especially the Anglo-Saxon race of other countries of the world, is not present in the natives of this province. The natural affection of the native of this province for the land in which he was born is easily explained, because having but few wants and not knowing luxury, he is not forced to seek elsewhere the little which he requires to live, as in view of the prodigality of nature in this section he always has more than necessary.

In addition to being sober and moderate the inhabitants of this province are naturally simple. It may be asserted that persons having a knowledge of luxury are extremely rare, and even the more wealthy families are content with a life of relative comfort and moderation. * * *

One of the most salient features of the character of the Batangan is his timidity and the profound respect which he professes toward the authorities and educated people, whom he considers of a superior class. He is extremely backward in addressing equals, speaks when it is necessary, and shows enthusiasm very rarely; but when he speaks to persons vested with some authority, and who are distinguished from the general masses somewhat by their knowledge and education, timidity and respect are still more evident. This timid character of the Batangan is due to the defective education which he has received, imbuing him with principles contrary to the dignity of a man which the inequality of persons sanctions. One of the proverbial inclinations of the natives of this province, which may almost be classed as a custom, is that relating to cockfighting, which is for the Filipino what bullfighting is for the Spaniard and boxing for the Anglo-Saxon.

The training of gamecocks is a work which occupies daily not only many players, but also persons who devote themselves thereto and make a living from it, as well; trained and cared-for cocks, if they have good fighting conditions, are sold at very high prices, some reaching the fabulous price of $100 Mexican, and sometimes more.

Of the ancient customs which constitute the law of the Tagálogs there are still many traces in this province. The father of a family, like the ancient paterfamilias of the

Romans, is still vested with many rights similar to those which the ancient Roman law vested in the parental power. The religious respect which children displayed to their parents is still preserved, and the latter are obeyed without question. It is very rarely the case that a child acts against the will of its parents, however despotic it may be; but, notwithstanding the fact that parents are vested by custom with almost absolute power, there occur very rare cases where they abuse their authority. The subjection to paternal authority is complete as long as the person is not emancipated. In that state he does not own anything, and all that he earns by his personal work belongs to the head of the family, who may dispose thereof at his will. In order to adopt some determination in a matter of importance, he requires the permission of the father or of the person exercising the paternal power. And even after emancipation the son in many cases must consult the paternal or maternal will before contracting a serious obligation. The almost absolute power of the father of a family extends not only to the children but also to the mother of the same, who on marrying is not emancipated, but enters upon a new kind of paternal power, represented by the husband.

In general, the condition of woman in this province, in comparison with European or American woman, is still quite primitive and leaves much to be desired. While single, even though of legal age, she is always subject to the paternal power and is never emancipated. When she marries her marriage gives rise to the emancipation, but this is nothing but a fiction of law, as she really becomes subject to a new parental power, which is that of the husband, sometimes more despotic than that of the father. The subjection of the daughter to the paternal power of the father is more complete than that of the son, because she is not even permitted to leave the house for a point at some distance when some matter requires it; and the field for the display of her activity is somewhat confined, being many times limited to the house itself.

With regard to the rights of the sons to the inheritance of their parents, the daughters generally have little participation therein, and when the father dies and his property is distributed the son receives the best and largest portion of the estate.

When the woman marries and brings property to the marriage, the husband has the administration thereof, disposing of the same as if it were his own. A married woman can not make any contracts by herself, and in any business, no matter how insignificant, she requires the intervention or authorization of her husband.

One of the most curious customs, the origin of which is lost in the obscurity of tradition, and which is preserved as yet, is a kind of law of customs among the uneducated class regarding marriage and contracts preliminary thereto. After the suitor for the hand of a girl has been formally accepted, he is obliged to render personal services in the house of the parents of the same for one, two, and sometimes more years, until the day fixed for the marriage arrives. During this time the suitor selects the hardest work in the house, in order to curry the favor of his future parents-in-law and gain a reputation of being an industrious boy, and thereby assure the realization of his marriage, because if his conduct during the time of the service does not come up to the expectations or does not suit the caprices of the future parents-in-law, the projected union is sure to be broken off. Sometimes the suitor not only gives his personal services alone, but brings in his friends at times and on days when more workers are needed in the house in which he serves, this always taking place during the period of the preparation of the land for the sowing of rice and sugar cane, and when these plants require the care of man for their complete development, and at harvest time. It is furthermore the custom to make more or less valuable presents to the parents of the fiancée, according to the wealth of the parents of the suitor.

Upon the approach of the day fixed for the marriage, when it is to take place

between well-to-do people, an agreement is made between the parents of the future spouses as to the dowry which those of the male are to give the wife or her parents. In this province two kinds of dowry are known, one which is delivered to the parents of the girl, which is not strictly a dowry according to the general acceptation, constituting a kind of gift which the suitor or his parents give to the fiancée, and the other that given by parents to their sons when they marry, which is the real dowry, and what is called in this province "*bigay-caya.*" The parents of the suitor designate the amount of the dowry, whether it consists of cash or other property, and the parents of the girl at the same time state an amount, in order that after marriage the newly wed will have sufficient with which to meet the first necessities of the marriage and which may serve as a basis for the beginning of business. Sometimes the parents of the suitor are the only ones giving a dowry, those of the girl not doing so by special agreement between the parents.

Regarding a very prevalent custom, we may see what Mr. Sastrón, Spanish governor of this province during the Spanish administration, said on page 52 of his work, "Batangas and Its Province:" "Another custom which is worthy of consideration is that prevailing among these natives (of Batangas) of meeting for the nine days after the death of a relative in the house where it took place, for the purpose of saying the holy rosary in the church every morning and evening. At the end of the nine days the relatives and friends of the deceased meet in the same house and after a brief prayer for the eternal rest of the deceased, they all sit down to a banquet, according to the means of the family, but which is always sumptuous."

The respect for the dead in this province sometimes borders on real idolatry, and hence it is that everybody takes off his hat, murmuring some prayer for the peace of the deceased, when a funeral is met. It is very seldom that the dead are badly spoken of.

Due to the simplicity of the inhabitants and to the lack of education of the masses, many superstitions, the sad legacy of past ages, are still preserved. The religious education which they receive, and which greatly favored the difficulty of abolishing superstition, has also influenced greatly the general credulity of the masses in supernatural acts, which impress their oriental imagination deeply. Hence, notwithstanding the very radical changes in this community, we still have to lament that a majority of our natives believe in miracles and witchcraft.

The low class has not yet lost faith in the "*antin-antin*" (a kind of amulet) and believes in the efficacy of prayers in Latin to free a person from a future evil. At the present time, as for the last century, there exists a belief in the existence of the "*Nono,*" "*Tigbalan,*" "*Asuan,*" "*Patianac,*" "*Lumalabas,*" "*Mangcuculan,*" "*Iqui,*" and other evil spirits. The "Nono," according to the common belief, is the spirit of old people. The superstition consists in asking permission of the "Nono" when entering unknown places such as forests, rivers, brooks, mountains, and other places which are entered for the first time; because if permission be not asked, the "Nono" becomes angry and will cause some misfortune. It is also customary to ask permission of the "Nono" when some large tree is felled, when certain fruits are taken, or when a piece of virgin land is first prepared for cultivation. And when a person falls ill without the cause of his illness being capable of explanation it is attributed to the bad will of the "Nono," who has been displeased by some disrespectful act on the part of the patient. The "Tigbalan" is a phantom which, according to the common belief, has the gift of appearing to man under different forms. It is believed that the appearance of any person or any animal can be simulated, and it is told of persons that, having made friends with the "Tigbalan," they have converted themselves into savages and no longer desired to live in towns. The "Asuan" is also an evil spirit which is in the habit of appearing at night in the shape of a dog or a hog beneath the houses of pregnant women or of those who are

in labor, in order to kill the offspring. The "Patianac" is the phantom of the Spanish, and it is believed here that it is the soul of a child dying without having been baptized, and it is said that it appears in the woods and that it chirps like a bird. The "Lumalabas," according to the popular belief, is the soul of a dead person which appears to man in this world in horrible form. Sometimes its apparition has caused insanity or the grave disease of the person to whom it has appeared. It would be very tiresome to enumerate the forms which the "Lumalabas" adopts in its appearance to a living being. The "Mangcuculan" is a man or woman possessing the virtue of causing the sickness unto death of a person with whom he or she is displeased. This belief is so widespread that when it is rumored that a person is a "Mangcuculan" very few will approach the same, and those who do so, do everything in their power to please him or her. The "Iqui" is a man who has the virtue of flying at night, leaving half of his body, from the waist to his feet, in his house. It is said that the "Iqui" lives only on the liver of men, and when he sallies out at night he stations himself in the roofs of the houses, whence he kills sick persons by means of a tongue of such fineness that it can hardly be distinguished, appearing like a thread of cotton, which penetrates his bowels, causing death. What is not explained is the method they employ to remove the livers.

Among gamblers the superstition is also prevalent that if they should meet a dead person or funeral in the street on leaving their houses, they must not go to the gambling house or cockfight, because they would surely lose.

There are some other superstitions of less importance which I will not recount in this report, in order that the reading thereof may not be long and tiresome.

Governor-supervisor, island of Marinduque (Tagálogs):

Although the Filipinos throughout the archipelago have a common basis or foundation with regard to their manners and customs, it is but just, nevertheless, to state that the inhabitants of at least two of the municipalities of Marinduque differ somewhat from their fellow-countrymen in what relates to culture and the great desire of assimilating everything connected with modern civilization.

The residents of Bóac and Gazán, for example, are rivals for the supremacy in education, agriculture, and commerce, this wish constituting a noble pride, because its final objective point is the distinction of the municipality to which they belong. A genteel but not a luxuriant appearance, even among the lowest country men and women, a life of economy but not of penury, the proscription of great vices, no gambling or smoking on the part of the women, education above everything—these are the praiseworthy conditions observed among the people of this island.

It is certainly very pleasing to see towns like those cited where the persons most prominent by reason of their position and degree of education do not attend the cockfights, unfortunately a general vice throughout the country. This is so true that there is no cockpit in Bóac, because it has never been able to do a profitable business, and in Gazán the contractor was obliged to attempt to open his cockpit three times without having been able to give consecutive fights during the course of a year. * * *

But besides these fine qualities it is painful to have to confess that customs exist which form a dense cloud that only education will be able in time to dissipate with its light. I speak of superstitions. It is a fact that superstition exists in direct proportion to ignorance; that is to say, the more ignorant a people the more superstitious they are. Thus it is that the other townships of the island are relatively more superstitious than those above cited, without this signifying that the superstitions which they have and observe are few in number.

The most important superstitions are the offspring of religious fanaticism and are common to all the inhabitants of the archipelago. These are the belief in the

"*antin-antin*" (amulet); the invocation and lighting of a candle to St. Anthony when something is lost and it is desired to know in whose possession it is; the harvest of rice not being gathered except when the moon is in its first or last stages, in spite of there being powerful reasons for doing it without delay, as, for example, the presence of locusts. The reason for this is the belief that the crop will be more abundant and otherwise would be less. There are other superstitions which are observed in this section, but whether they are common in the archipelago I do not know. Such are the following:

When a family loses anything and it is suspected that some servant is responsible for the disappearance, he is made to chew some uncooked rice. If the saliva which forms is clear and watery, then the person who chews it is innocent, otherwise he is declared guilty.

When a house is built no holes must be dug for the right-side posts if they are not to be placed therein on the same day and before vespers, because some member of the family would run the danger of dying, as the hole is looked upon as signifying the grave for a body. But they believe that they can offset this danger, when things beyond their control make it impossible for them to place the posts in the hole on the same day, by placing provisionally therein one or more sticks of any kind representing the true posts; then the hole ceases to be a grave, because its purpose is manifest.

The first post put in must have in its base at least one silver coin, because thus the owner of the house will always have money, even though it be very little, from the proceeds of his work. The buried money will cause the owner of the house to live very economically.

In the construction of the door, if the house be of bamboo, the pillars of the principal door must be constructed first, because thus the owner of the house will always find money easily—that is to say, money will come into the house rapidly.

The bamboo used in the construction of a house is not burnt, because if it were, the centipedes in the roof would fall. The same will be the case if the house be swept at night.

In order to sow rice in a "*caingine*" the owner of the field must go to it at 12 o'clock at night on the day preceding that of the planting, and deposit therein the seed with great care at the foot of a cross first placed in the middle of the land. Some grains of the seed are taken and buried. This is done in the belief that when the seed germinates it will be left undisturbed by the bird or insect, even though no care be given the land; and when it is observed about the time for harvesting the rice that part has been destroyed by rats, the owner endeavors to conceal this fact from others, and even from his own wife, and gathers from the ground the scattered grains, burying them at a distant point, because it is believed that by doing this rats would not again disturb the field.

After the rice has been reaped the owner must get the smallest basket he has and deposit therein beforehand two or three bundles of rice on the stalk, but this must be done when the tide is at its highest, because thus, no matter how small the land, the crop will be large.

Whenever the rice is to be thrashed no one must touch the warehouse before the owner has done so, as otherwise the amount of rice to be thrashed would diminish.

There are other superstitions among the common people, but their nature is so confounded with religious fanaticism that the last name should really be applied to them, for which reason they are not explained.

Governor-supervisor, province of Masbate (Tagálogs):

The natives of this province are, as a rule, indolent on account of their limited wants and the fertility of the soil. They are of a cheerful and lively temperament, lovers of company, diversions, and pleasure. They profess a deep love of home,

1. PRESIDENTE OF AGURAN (VISAYAN). 2. PRESIDENTE OF OROQUIETA (VISAYAN). 3. PRESIDENTE OF MISAMIS (VISAYAN). 4. ENUMERATORS OF MARINDUQUE (TAGÁLOGS). 5. ENUMERATORS OF MASBATE (VISAYANS).

and preserve, in its purity, the faith and religion of their ancestors. They are temperate in eating, modest in dress, and simple in manner. They are pacific, mild, respectful, hospitable, and grateful to those who treat them well, but very sensitive, and silent and patient under mistreatment, and quarrelsome and vengeful when a good opportunity offers. They are suspicious of strangers, due to the fact that foreigners, with but few and honored exceptions, have exploited the above-mentioned idiosyncrasies of the people of this region. Judging from our past, examining carefully the present, and discussing such as to the future, any law or regulation emanating from the government or constituted authorities is the object of remark or conjecture by them. They are thoroughly conversant with the legal rights of the Philippine people and aspire without exception to self-government and, convinced of the hopelessness of violent measures, they hope to secure it by pacific evolution from the proverbial disinterestedness of the magnanimous nation of Monroe.

Among the lower and less cultivated classes are practiced some superstitions in farming, in the cure of diseases, in fishing, and in marriages. There is no lack of superstitious beliefs as to the origin of sickness, the appearance of ghosts, evil spirits, in the virtue of amulets, either with reference to journeys or the prediction of future events. But day by day it can be plainly noted that such evidences of paganism are giving way to the conquering march of civilization, which with giant strides is penetrating even the rural cabins.

Governor-supervisor, province of Ambos Camarines (Bícols, Tagálogs):

Ambos Camarines is known as a "Bícol province," and its capital, Nueva Cáceres, is the recognized center of the Bícol country, including the provinces of Albay and Sorsogón. The overwhelming majority of the inhabitants of the province are of the Bícol tribe, the only important exception being in Camarines Norte, formerly a separate province, where the Tagálog predominates. In that district the towns of Capaloñga, Labó, Indán, Paracale, Mambúlao, and San Vicente are almost entirely Tagálog; Basód, the nearest town to the Camarines Sur border, is Bícol. Dáet and Talísay are mixed, the Tagálog tribe showing a majority. At about Dáet appears to be the line where the two tribes have come together and intermingled, and in that locality both the Tagálog and Bícol languages are spoken interchangeably. So far as I have observed, tribal prejudices have little or no influence upon the social or political relations of the people, and, contrary to a more or less general impression among Americans and foreigners, the Tagálogs of Camarines Norte are good citizens, and as pacifically disposed and as loyal to the government as the people of any other tribe or section. The municipal government of Dáet, a mixed Bícol and Tagálog town, is a model one, the officials and municipal councilors being an exceptionally able body of men, and while they represent varied interests and most of them are business competitors and rivals, complete harmony prevails when they meet in their official capacity on questions relating to the public welfare.

Throughout the remainder of the province the language in general use is the Bícol, but it is subject to such wide variations in different localities as to practically divide it into distinct dialects, each with manifold diversities as to pronunciation, accent, and localisms. As the vast majority of the people have no knowledge of Spanish, and therefore have the local dialect as their sole medium of communication, they are far from a united people, residents of towns separated by but a few miles being considered practically as foreigners to each other. However, the pacific disposition of the people, together with the fact that their habits are not migratory to any great extent, prevents the lack of harmony in the matter of language from being the cause of dissensions or an undue degree of sectional rivalry. The mountain districts con-

tain a comparatively small number of so-called "Igorrotes," more properly denominated, I believe, "Negritos." These people are designated by different names, according to locality, such as "Agta," "Aeta," etc., but are all of the Negrito type. Mingled with the Negritos in the mountains are another class known as "Simaron," made up of renegade Christian Filipinos and the descendants of such, and persons who have voluntarily chosen a wild life in preference to living in the civilized communities. Among the Simaron class are also found escaped criminals and fugitives from justice. This class is not strong numerically nor of much importance in any respect.

The masses of the people have in former times had no educational opportunities and are extremely ignorant and superstitious. They are easily led and controlled by strong leaders, are credulous as children when dealing with persons in whom they have confidence, but shy and suspicious as to strangers. They are a mild tempered, law abiding, pacifically disposed, and good humored people, and possess a mental capacity such that I believe universal education and improved opportunities will raise them to a plane of civilization higher than that occupied by any other Asiatic people.

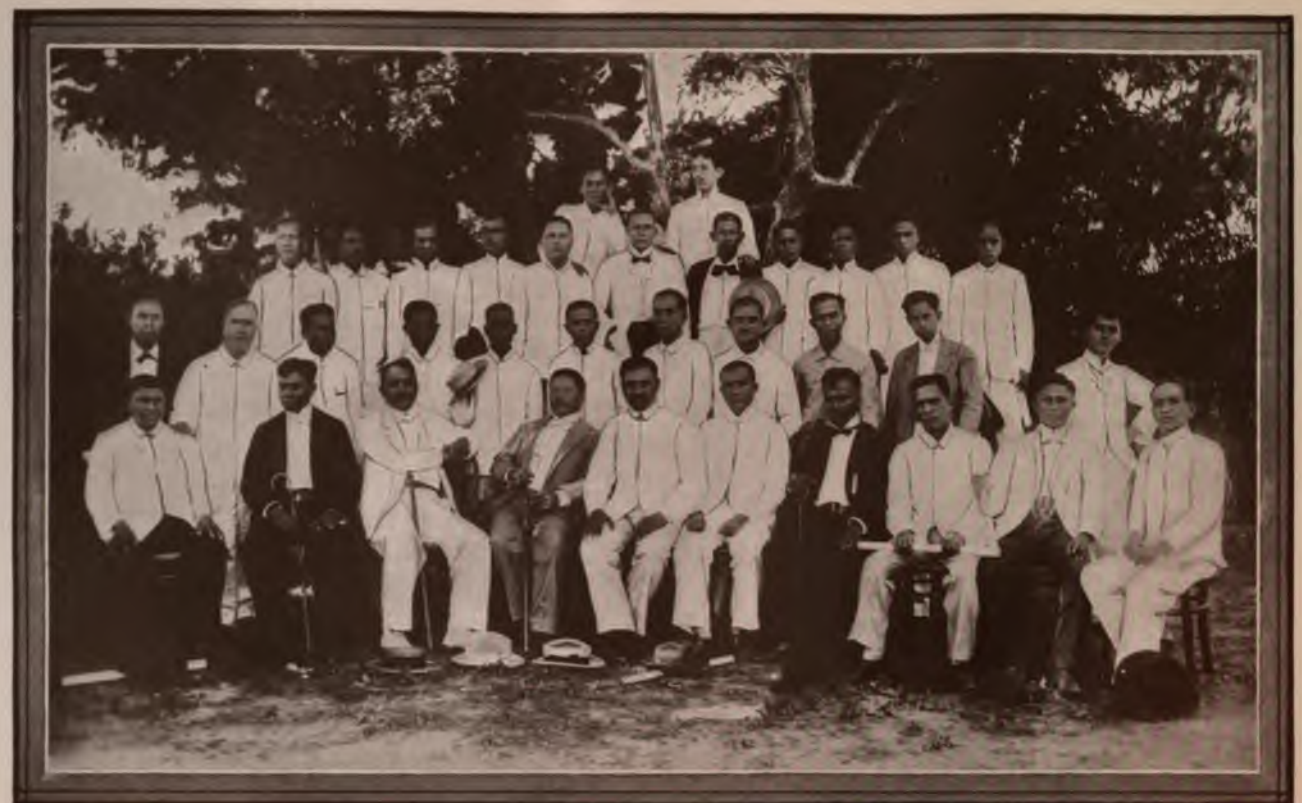
A very noticeable characteristic of the people here is the aggressiveness displayed by the females and their evident superiority to the males in business capacity. Whenever a family rises from the lower ranks of society to a position of comparative affluence and social importance it is usually found to be due to the tact, energy, and close attention to business of the female member of the matrimonial partnership. The women are, when so inclined, heavier gamblers and users of intoxicants, and more prone to resent personal violence in settling their differences, than are the men. The people generally are socially inclined, extremely fond of music and dancing, in both of which they show great proficiency, and are hospitable to a fault. Their besetting vice is gambling. The passion for play has a strong hold upon all classes and is productive of many evil results. There appears, however, some ground for the hope that in time, with the spread of education and increase of general knowledge, and with the introduction of athletic and other forms of rational and legitimate sport and amusements, the influence of the "monte" table and the cockpit may be broken; and while it is scarcely to be expected that the gambling evil can be entirely stamped out, it certainly can, by the means above mentioned, be materially decreased.

Considering everything, the people of this province may be said to be in a fairly prosperous condition at the present time, and there is a marked improvement over the conditions of two years ago. Judged by western standards, they can not truthfully be said to be a thrifty and industrious people. They are not given to "taking thought for the morrow," but live from hand to mouth and are not generally disposed to labor beyond the point of supplying their immediate necessities. They are, however, faithful and industrious when placed upon a given task with fair remuneration in sight, but when that is finished and they find themselves in possession of a sum of money sufficient to live on for a few days, they do not, as a rule, seek further employment until their little surplus is exhausted.

Governor-supervisor, province of Cápiz (Visayans):

One of the customs observed up to the present time is the profound respect for elder people, to such an extent that a lack of respect by a child to its parents is a sacrilege and will lead to damnation.

A young man courting a girl is obliged also to serve the parents of the young girl for a period of two years and to have his own house, without which requisite he would not be acceptable as a husband.



GOV-SUPERVISOR S. HUGO VIDAL AND PRESIDENTES, CÁPIZ, ISLAND OF PANAY (VISAYANS).

They are, as a rule, superstitious, and believe in apparitions, enchantments, and other witchcraft.

Many relate that an ancestor died for having cut down a secular tree called "*lwonk*" or old; others that they have seen an apparition called "*tiktik*" or "*aswang*" (malignant spirits in the form of animals, as a dog, a cat, or in human form, either of an old man or woman) under the house during the sickness of a member of the family. Even in the Bay of Bataán, where there are pearl beds, there is a place where no diver dares to work, as there is a belief that at the bottom, where there are beautiful shells containing pearls of large size, no one can go, on account of the presence of a large white turtle and an enormous fish, which watch these places and which kill every human being who descends to the bottom.

Among the mountain tribes and low classes of the towns the transmigration of souls is believed in, and there are at the present time rascals who pass themselves off as Pope Macario and Father Juan, who have been dead for years. The former was celebrated during the Spanish revolution, having been one of the chiefs of the mountain tribes of Tapaz and Jamindan, who burned and pillaged many towns.

The other was a coadjutor priest who lived in the mountains, performing miracles and marvelous cures, as the old inhabitants state, and who died in the island of Paragua, to which he was deported by the Spanish Government.

Governor-supervisor, province of Bohol (Visayans):

As a rule the people of Bohol do not differ greatly in their customs from other civilized Filipinos, but their characteristics, however, are love of peace and justice, respect under all circumstances, modesty, hospitality and courteous treatment to members of the family and strangers, and morality.

There are traditions regarding ancient superstitious customs, but the people of the present generation have uprooted them completely—that is to say, they are not practiced, being held as contrary to the dogmas of the religion they profess.[1]

The people of Bohol follow the mode of life rendered necessary by their uses and customs, and it can be said that their life from an economical standpoint is, and has been, adapted to the circumstances of the times. Perhaps the adoption of new methods and the relegation to the background of the ancient methods which they are using in the development and progress of agriculture, industry, and commerce, which are at a standstill or in a state of embryo, will make their lives prosperous, changing them from what they have been up to the present time—that is to say, lives which can not be qualified as either poor or rich.

Governor-supervisor, province of Negros Oriental (Visayans):

The population is divided into three social classes. The first is composed of families who, on account of their wealth and culture, enjoy a leisurely and independent position. The second class is composed, for the most part, of honest and industrious families, possessed of small properties, who are very economical, and although having but little ambition, are lovers of order and hospitable. They are happy on account of having but few necessities, and enjoy a position relatively comfortable. The third class is formed of the poor, who are the farm laborers, servants, fishermen, etc. They are, as a rule, ignorant, and therefore fanatical and superstitious. Their lack of education has created but few necessities, and they are therefore indolent. They are generally sober and strong. Most of them eat but twice a day, and their food consists of corn meal cooked with water, and small salted fish, so that the average daily expense of a family in the country is about 25 cents Mexican, while those in town live on from 40 to 50 cents per day.

[1] This is thought to be rather sweeping and rhetorical. It is understood that all the Visayans have practically the same superstitions.—*Director.*

Governor-supervisor, province of Negros Occidental (Visayans):

It is believed that the Negritos were the first inhabitants of the islands, which they named, and that later they were driven to the interior by the primitive Malays. Both, refractory to the civilization offered them by the immigrants from Panay and Cebú, were in their turn relegated to the mountains by the new populators, who brought the island to its present condition. The natives of Panay and Cebú brought with them to the island of Negros their civilization, habits, and customs. That is the reason why, in the zone west of the mountains, Panayan Visayan is spoken and the practices and customs of Panay are observed, while in the zone east thereof Cebúan Visayan is spoken and the habits and customs of the island near that region are observed. With regard to the province of Negros Occidental, the thirty-one towns of the latter on its western coast, from Isiu to Sagay, speak Panayan, while the language of the towns of Escalante, Calatrava, and San Carlos, on the eastern coast, is Cebúan.

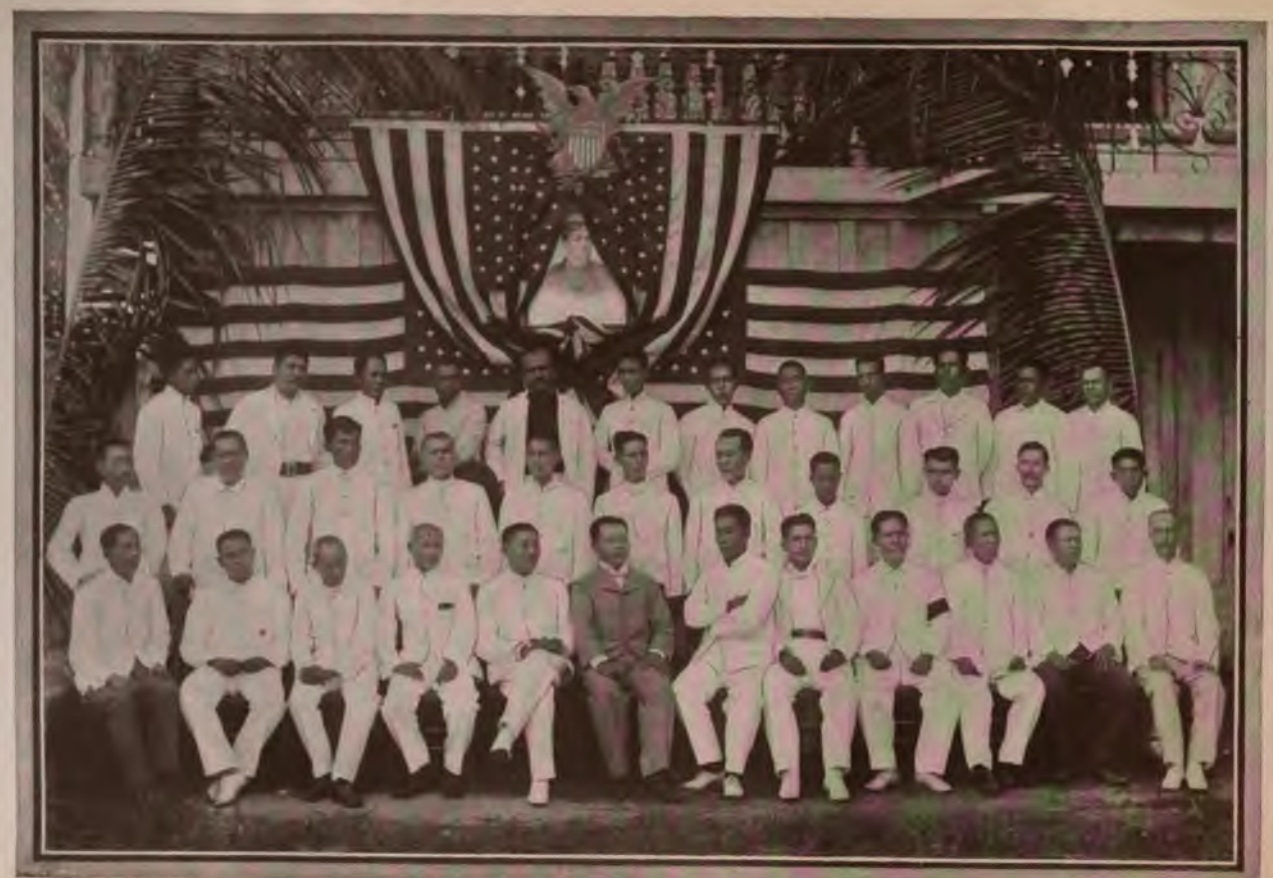
The Filipinos, therefore, of this part of the island do not differ at all from those of the rest of the archipelago, especially from those of neighboring islands. Their character is peaceable and respectful, and the customs of the wealthy and educated class are so different from those of the poor or laboring class, that while the former live in the European style and are studious and industrious, the latter still retain traces of primitive civilization and are fanatical in their religion and pass their time without bothering much about the future.

Superstitions are prevalent among the illiterate class, composed of the poor, and they are so varied that a book could be written thereon. It will suffice, however, to cite some of them, as, for example, the belief that the spirits of their ancestors return after a certain invocation, so that spiritualism existed here long before the work of Allen Kardec made him famous. The belief in the spirit of the woods and in the spirit of rice among the country people is worthy of note on account of the general character thereof. Special offerings are made to these before the smallest piece of ground is cleared and before the sowing or harvesting of rice. Amulets are also believed in, as well as prognostications, incantations, and many other things which it would be difficult to embody in this report, and which, by their character, it would be possible to consider as imported on account of their resemblance to the superstitions known among certain classes of Spanish people.

It is also necessary to confess, although it makes us blush to do so, that the prostitution of the Catholic religion, which the religious communities preach here as they see fit, has contributed greatly to the belief in superstitions and terrible fanaticism of the uneducated people. This gives rise to a belief in the most stupendous and ridiculous miracles, the most laughable practices, seeking the intervention of celestial advocates in the most trifling matters of ordinary life, and many other beliefs springing from fanatic ignorance and fermentations of the primitive, credulous, uncivilized state.

Wealth and poverty in the country are, as a rule, permanent. The former is the patrimony, if so it can be called, of the higher class, which, as has been stated above, is the studious and industrious class, because it pursues the ideal of living comfortably, luxuriously, and in pleasure. A family with a moderate fortune seldom is ruined; but on the contrary this fortune increases daily, due to the constant labor to increase it. A wealthy Filipino does not generally desire to undertake daring speculations as the Saxon does, who increases a capital to fabulous proportions or reduces it to the lowest ebb. He is satisfied with gaining little, and that little on a very safe basis. Almost all are engaged in agriculture.

Poverty is characteristic of the working class, and is of a permanent character. There have been cases—rare, to be sure—in which a laborer, by constant labor, honest habits, and careful calculations, finds himself with an enviable competency.



GOV-SUPERVISOR LOCSIN AND PRESIDENTES, PROVINCE OF NEGROS OCCIDENTAL (VISAYANS).

Pauperism, properly so called, nevertheless, does not exist in this province. This is due to the fact that living is relatively cheap, as mother nature is prodigal, and without much effort the great fertility of the soil furnishes sufficient for daily sustenance.

Governor-supervisor, province of Iloílo (Visayans):

The customs and manner of living of the inhabitants of this province are, generally speaking, identical or very similar to those in the other provinces of the archipelago; they are moderate, temperate, simple, and hospitable in every respect. They are very much attached to their homes and families, which they do not leave except when forced to do so by reason of being obliged to seek their support in other sections. Following their primitive customs, in the majority of the townships of the interior of this province, parents are in the habit of making their children marry at a very early age. It is not a rare thing to see young girls from 12 years up, almost children, married to boys of 14 or 15. Nor is it rare to see in some sections marriages contracted by the parents before their children have reached puberty, and which are consummated when the wife attains 12 years of age. This custom, however, is disappearing gradually, and at the present time there are few marriages of this character. There is also the custom, at least in the towns of the interior, when the parents of a woman accept the proposal of marriage of the claimant, of demanding something of him; if he is poor, that he serve the family for a certain time before the marriage; if he is rich, that he build a house which is to serve as the residence of the couple when married, or that he improve or enlarge the house of the parents of his fiancée. If these requests are not complied with the parents of the fiancée are relieved from their obligation.

If they are moderate and temperate in their customs, they are no less so in their food. With the exception of those living in the capital, and the neighboring and littoral towns where meat and fish form the principal part of the food, the main nourishment of the poorer classes consists of vegetables and other products of the earth, which furnishes the necessities of man with little effort on account of its fertility.

It may be said that the intelligent inhabitants of this province are not superstitious, although the ignorant classes still preserve some of their ancient superstitions, such as the fear of cutting certain trees which they believe may bring sickness, or the fear of digging up certain patches of ground (*bungsud*) for the same reason, and other popular beliefs of this character. The ancient superstitious beliefs have disappeared under the influence of the Catholic religion and civilization; but by reason of the religious practices which have been introduced here, it may be asserted that here, as in all parts of the Philippines, there exists a veritable religious fanaticism among the inhabitants.

Governor-supervisor, province of Cebú (Visayans):

There are scarcely any peculiarities which distinguish in a marked degree the Cebuanos from the other inhabitants of the islands. The culture, religion, disposition, manners, and customs of all are similar. There is to be noted, however, a greater industrial activity among them than among those of the neighboring provinces, especially in all that relates to agriculture, due, perhaps, to the necessity of stimulating production. The soil of Cebú is not naturally extremely fertile, and manual labor is necessary in order to make it supply man's necessities.

The common people are rather given to credulity than to superstition. They have great faith in the Catholic religion, some of whose saints are venerated with great devotion, the inhabitants of one pueblo making pilgrimages to others at the time of their religious feasts.

They are, as a class, industrious, and the proportion of idlers and vagrants is very small indeed. The women are more active than those of other provinces. They are not only good helpmates for the men, but compete with them, and at times, as in household industries and in small retail stores, surpass them.

War has created a disposition to follow their own ideas, and has generated a great distrust of strangers. The war also produced general prostration by the destruction of many sources of wealth.

Governor-supervisor, province of Sámar (Visayans):

With regard to the people of this province, their manner of living is exceedingly good and peaceable, and they are very respectful to the constituted authorities. As governor of this province, I have the honor to state that the people religiously comply with all orders issued by the Government. It must be said, however, that a small number of the people are extremely ignorant and, due to this ignorance without doubt, are superstitious. These people believe in witchcraft, ghosts, and spirits, in the virtue of amulets and "*antin-antin*," forming the nucleus of the ladronism in the province of Sámar. The celebrated bandit, Pablo de la Cruz, called Pope Pablo or San Pablo, who gave so much trouble during the time of the Spanish Government, and who has been disturbing the peace of this province until a short time since, is a member thereof.

The customs of these people are patriarchal; they are very simple and hospitable people, and are, as a rule, fairly well off, as the province is wealthy in itself.

Governor-supervisor, province of Surigao (Visayans):

The natives are hospitable and like amusements and family reunions. The majority believe in miracles of saints and in the superstition called "*anting-anting*." They spend most of their money or savings celebrating the feast days of the patron of the town every year, and on funerals and masses for the repose of the souls of deceased persons. As a rule each person has his piece of ground sufficient to support life with its products. They can not be considered poor, nor can they be classified as rich, being fairly well off. This condition is permanent, excepting with such as have means to secure their prosperity.

A majority of the poor people do not wash themselves when they rise in the morning, but they do bathe once or twice a week if they can, and are clean and neat in their clothing. They sweep their habitations daily but do not mop them.

The simple and industrious life of these natives, their manner of nourishment, in which they employ nothing but what their fields give them, contribute to their good health in general and under ordinary conditions to their attaining a very old age.

Governor-supervisor, province of Misamis (Visayans):

The inhabitants of this province are generally frank and sincere, as the province has been visited but little by foreigners or even by immigrants from other provinces of the archipelago, excepting from Bohol, who are a docile people; therefore they preserve patriarchal customs and there is but little vice.

The richness of Mindanao furnishes means of living at but little cost to the inhabitants. This fact, together with their habitual sobriety, makes what is known to us as "the struggle for existence" unknown among them, and therefore there is to be noted much apathy and but little desire to labor and economize. In the towns and villages remote from the capital and from the more progressive towns is where this indolence is most clearly marked. The idle live at the expense of the industrious; the former are almost assured of their food through the hospitality of the latter, who in turn are so improvident that they pay but little attention to the future.

GOV-SUPERVISOR CLIMACO AND PRESIDENTES, PROVINCE OF CEBÚ, (VISAYANS).

PRESIDENTES OF THE TOWNS OF JARO AND LA PAZ, WITH THE GOV-SUPERVISOR DELGADO OF THE PROVINCE OF ILOILO (VISAYANS).

GOV-SUPERVISOR JULIO LLORENTE AND PRESIDENTES, PROVINCE OF SÁMAR (VISAYANS).

Superstition is very deep seated among the ignorant masses, and it never manifested itself since liberty of worship was established in such an alarming manner as at present.

From an analysis of this subject the following deductions may be made: The lower class of inhabitants of this province, and perhaps of the entire archipelago, is predisposed to superstition, and the priests or friars occupied themselves in cultivating the same because of the material benefits which they derived therefrom. The belief in supernatural events or miracles was the means employed for the increased sales of scapularies and rosaries, and to obtain rich offerings for churches and images considered as miraculous. The pilgrimages to reputed sanctuaries with their novenas and chanted masses produced altogether a source of revenue not to be despised, without taking into account the prestige and reputation which they acquired and which served as a shield for imposing upon their followers. Nevertheless this superstition was directed exclusively for the benefit of the church and was regulated and monopolized by it. The church saw to it that Christians converted into blind believers should not depart from the faith indicated. However, the revolution came, the parish churches were unattended, and the people submerged in superstition suddenly found themselves without guides, and agitators availed themselves of this religious aberration and special predisposition to form societies which began with religious services and gradually degenerated into rebellion against the constituted government.

Great riches are not found in the province, nor does poverty among the poorer classes reach the point of real suffering, because their naturally temperate character allows them to accustom themselves to circumstances and to the measure of their necessities.

The customs and general habits of these people, their quiet life, their limited ambition, and their moderation in expending moral and physical power, might be the chief reasons for the preservation of health and longevity, if they had any idea about sanitation, and such simple knowledge of household medicine and rational therapeutics, as would benefit them, not perhaps in obscure diseases which call for the services of a physician, but in the common ailments which, although trifling at the beginning, become serious and even fatal because of bad treatment. Malarial fevers, for example, whose specific remedy is quinine, have not worked much injury in the capital, because the people are better educated and have employed this remedy, while among the towns in which, on account of their ignorance, the people do not even know of the existence of such a valued remedy, these diseases have claimed more victims than the cholera.

The Hon. W. H. Taft, Secretary of War, who, in his capacity as governor of the Philippines, visited all parts of the archipelago and was brought into frequent personal contact with natives of all classes, and who has made a profound study of their characteristics, has thus described them:

Contrast the Filipinos with other Malays and the Oriental peoples, and I ask you to name a people offering more opportunities for development along the lines which American ideals require than the people of these islands. To begin with, they are a Christian people, and they have been so for three hundred years. It will not be said that I have been partial to the Spanish friars and the Spanish sovereignty here, but I am anxious to admit in the fullest manner the debt which these people and the world owe to Spain and her friars for Christianizing seven millions of Malays and giving them, speaking broadly, Christian and modern ideals. It is true that their Christianity sometimes seems different from European or American Christianity, but in forming a subject for the operation of elevating influence, of education, and the environment of civilization, this people is centuries in advance of the Mohammedan

or Buddhist. The Mohammedan, the Buddhist, the Chinaman, looks with a sense of superiority on the efforts of the Christian European nation to better his condition. He has no desire for popular government, no longing for individual liberty. He opposes to development of this kind the impenetrable wall of disdain and contempt. * * * Now, I hope I am a reasonable man, and I am not disposed to quarrel with those with whom I differ. I know that the habits of the Filipino servant are trying to the American who first comes to these islands; I know that the laziness and indisposition to hire of the cochero are enough to cause blasphemy. I know that we have had instances of the grossest treachery and cruelty by Filipinos; I know that the Filipino is disposed to conceal his real feelings when in opposition to the person whom he is addressing; and I know that these characteristics are calculated to make the American impatient and condemn the race. When one's feelings of enmity are very much aroused it is difficult to set the limit to the expression of them.

The charge of treachery against them is unjust, I think, in one respect: They are an Oriental people, and the Oriental believes in saying to the person with whom he is talking what he thinks that person would like to hear. That is the tendency of the race. You graft onto that the Spanish tendency to superlatives (and the Orientals have some such tendencies without the Spanish mixture), and a Filipino will talk to you in such language, that if you do not weigh it in the light of this trait, you are quite certain to misunderstand him and be misled by what he says. He thinks you will construe what he says through that medium, and hence, if you do not, the charge of deceitfulness.

The case of the presidentes liable to assassination by the insurrectos, if they did not help the insurrectos, and to imprisonment by the Americans if they did; hence they preferred to help and be arrested. This has been made the basis of a charge of treachery against the entire race.

My experience with the Filipino is that he is moved by similar considerations to those which move other men. It is possible that crimes, ambush, and assassination are more frequent there than in other countries, but it is also true that kindness to him makes him considerably less anxious and considerably more reluctant to resort to violence against you than if you had been abrupt and unconciliatory in your methods. * * * That they are affectionate to their children and that they have a good family life I think is true. * * *

The 90 per cent of the Christian Filipinos who do not speak Spanish are really Christians. They are capable of education, and they have no caste or arbitrary customs which prevent their development along the lines of Christian civilization. They are merely in a state of Christian pupilage. They are imitative. They are glad to be educated, glad to study some language other than their own, and glad to follow European and American ideals. They differ utterly in these respects from the East Indians, from the Malays of Java, and the Malays of the Straits Settlements, and thus make our problem different from and vastly easier than that of England and Holland. * * * They are not a boisterous or turbulent people. If not aroused, they are gentle and kindly. Like all Orientals, they are a suspicious people, but when their confidence is won, they follow with a trust that is complete. In warfare, when their angry passions have full vent, they are cruel, and they execute orders of a supposed superior to commit homicide with a stoicism and indifference that we of the Western World can hardly understand. Ignorant as they are, they are very easily moved by men of their own race who speak their language and have an influence among them by reason of wealth or education. It is the great weakness of this people that first one leader and then another may command their support, and that factions may be created and anarchy brought about by the conflicting ambitions of the unscrupulous educated politicians among them. The educated are

CENSUS ENUMERATORS, PROVINCE OF LA LAGUNA (TAGÁLOGS).

divided into those who are wealthy and conservative, and those who are young, ambitious, violent, and willing to resort to extremes. Among the conservative type one finds men of culture, honor, honesty, and most reasonable views on every subject; but such conservative members of society are generally timid before the violent declarations of the educated "fire eater," whose words of enthusiasm and excitement can easily bring to his aid all the taos and men of lowly class who come within his influence. * * * The people whose means of communication are limited to a native dialect, with little or no literary knowledge, confined to a few provinces, even if they are able to read and write in that dialect, are so limited in their opportunity for obtaining information that they can not be said to be in communication with the modern world at all.

Under the theocracy which the friars maintained in the islands they were generally simple, attentive to their religious duties, lovers of their families, with the Oriental weakness for gambling; but they were temperate, law abiding, and respectful of authority. They were not overly industrious, but they were used to work at the direction of their encomienderos, or under the influence of their parish priest. They had learned a little catechism, and they were in a state of Christian pupilage. I am now describing the great body of the people who are to be distinguished from the *ilustrados*, or educated members of the community. * * *

With the friars gone, and no control exercisable through them, they are subject to influence by any one of their people who has wealth and education. They can be led about by the nose. During the disturbed conditions in the islands, when war prevailed during the years from 1898 to 1901, the most atrocious crimes were committed by taos, humble, ignorant, but apparently peaceable and nonvicious persons, simply because they were told by rich and wealthy Filipinos, or Filipinos of official position, that they must do so. They proceeded to bury people alive, or to cut their throats, or to chop them into pieces, with the imperturbability of the Oriental, supposing that they were entirely relieved from responsibility because of the direction given them by their superiors in education and wealth of their own people. This is what is called *caiqueismo*. It is the subjection of the ordinary uneducated Filipino to a boss or master who lives in his neighborhood, and who, by reason of his wealth and education, is regarded as entitled to control by the ignorant tao. There is, however, no fixed feudal relation. The population is mobile. First one leader, then another, can take control and lead in any direction, provided he understands the people, knows how to appeal to them, and is looked upon by them as an educated and wealthy Filipino. * * * They have no caste among them, no traditions which prevent the development of the people along European and American lines. Their Christian education has led them to understand and embrace, when sufficiently educated, European and American ideals. Those who are educated and wealthy among them adopt European customs, European dress, European manners with eagerness. * * *

They appreciate art. They appreciate statuary; they appreciate pictures. They have had two or three fine artists. * * * I have already stated they have a capacity for becoming machinists and skilled laborers. * * * The capacity for developing skill is in this people. The appreciation of art is among the educated classes. * * * The children of the poorest and most ignorant learn with ease and their parents are ambitious that they should learn. They value the advantage of education almost too highly, in that they yield to the influence of educated men of their own race abjectly and without restraint. The presence of Europeans among them for three hundred years and the birth of many mestizos, that is, children of the mixed blood, followed by the natural interest of the Europeans in the mestizos, led to the education of the mestizos even before the Indios, and so we find that the wealthy and educated Filipinos are generally of the mixed blood.

III. CHARACTERISTICS OF THE NON-CHRISTIAN TRIBES.

Negritos—Igorots—Ilongots—Mangyans—Tagbanúas—Tirurayes—Subanos—Bilans—Bagobos and Mandayas—Moros.

An effort was made through the supervisors of the census to collect as much information as was practicable concerning the present condition and way of life of the wild or non-Christian population. This was done either by the supervisors in person, or through the special agents and enumerators who went among them during the census, and the result of their observations is given in the following accounts, which have been compiled from their reports to the Director of the Census and adapted to the requirements of this work.

NEGRITOS.

As stated by Doctor Barrows, the Negritos are believed to be the aborigines of the Philippines, and of these about 23,000 still remain. They are found in many, although not all, of the provinces, living in a primitive state. In stature they are very short, the males averaging about four feet ten inches in height, while the females are shorter. Their color is black, their hair is woolly and bushy, their toes are remarkably prehensile, and they can use them almost as well as their fingers. They wear no clothing except a gee string; live on such food as they can find; have no fixed habitations or occupations, but wander about in the forests, having but little contact with other people, except when trading. They are skillful in the use of the bow, in throwing stones, and in making a fire, which they do by rubbing together two pieces of dry bamboo. The women, as is usual with uncivilized races, do all the work. They are not without a religious belief; their principal deity is the moon. They are very shy and distrustful; all efforts to civilize them have apparently failed. The Negritos probably approach as nearly to the conception of primitive man as any people thus far discovered.

With the arrival of the Malays in the Philippines, the Negritos gradually withdrew or were driven away from the coast into the

COLLECTION OF DEAN C. WORCESTER.

TINGUIANES.—1. GIRL SPINNING. 2. YOUNG WOMAN IN TYPICAL DRESS. 3. WOMAN AND CHILD. 4. GIRL OPERATING COTTON GIN.

mountains, but they are still found in the provinces of Cagayán, Isabela, Ilocos Norte, Ilocos Sur, Abra, Bataán, Ambos Camarines, Albay, Cápiz, Antique, Negros Occidental, Negros Oriental, Surigao, Sorsogón, and Iloílo.

IGOROTS.

This tribe, next to the Moros, is the most numerous among those peoples of the Philippines who are commonly regarded as wild. They are found in 11 provinces of north Luzón, as shown in the following table:

Lepanto-Bontoc	70,283	Pangasinán	3,386
Nueva Vizcaya	45,817	Ilocos Norte	2,148
Benguet	21,828	Abra	2,053
Ilocos Sur	11,151	Nueva Écija	501
Cagayán	10,819		
La Unión	9,820	Total	183,319
Isabela	5,513		

Besides the above, there are a few among the Christian population who were enumerated on schedule 1.

The Igorot people, as here treated, comprehend many Malayan subtribes of north Luzón, who have close physical resemblance and whose languages are closely akin. They exist under various names, in the different provinces, as shown in the list of wild tribes.

These people differ widely in development, ranging from the partly civilized down to the wildest of head-hunters. The most highly civilized are in general living in the western part of the Igorot country in the Ilocos provinces and La Unión and in western Lepanto and Benguet, while toward the eastern limits of their range, in Bontoc, Cagayán, Isabela, and Nueva Vizcaya, they are the least advanced.

Their country consists of mountain ranges and elevated valleys, with a fairly cool climate. Perhaps as a result, the Igorots, as compared with the Filipinos of the lowlands, are physically well built, strong, and active. They are quick, amiable, cheerful in disposition and industrious. For details regarding their present mode of life the following extracts from the reports of Governor Dinwiddie, of Lepanto-Bontoc, and Governor Pack, of Benguet, to the Director of the Census, give interesting accounts of their present condition:

The population of Lepanto-Bontoc—which comprehends Lepanto, with the subprovince of Amburayan on the west, reaching almost to the sea, and Bontoc to the northeast, is almost solidly Igorot or non-Christian. The principal Christian or Filipino population is found in Lepanto, on the main trails to the coast, at such towns as Concepción, San Emilio, and Cervantes, where the population is nearly divided between Christian and non-Christian, but in all the others it is overwhelmingly non-Christian, while in Bontoc, outside the pueblo of Bontoc, the population is composed entirely of Igorots. Of the population of Benguet, nearly 95 per cent are Igorot; of Nueva Vizcaya, two-thirds, while of the other provinces containing them the proportion is much less.

The manners, customs, and superstitions of the Igorots, while bearing strong general resemblances, when measured by the standard of the ethnologist, show many differences; for example, the people near the coast, or in Amburayan, exhibit, in more or less marked degree, the influence of Spanish and Filipino civilization, wearing more articles of clothing than their more isolated brethren, among whom a condition of almost nudity is reached in Bontoc, where the children (both boys and girls) run naked up to ten years of age, and the men do not wear even a gee string, but instead have a small flap of cloth or swinging pouch in front attached to a narrow cloth belt, while the women wind about their middles a single piece of cloth, four feet long by two feet wide, and held in place by a cord-woven sash.

A communal government, with the barrio as a unit, exists throughout the province of Lepanto-Bontoc, though in the western or coastward districts this is merged into operative district governments of Spanish origin, and hence the unit has wider scope than to the eastward. Recognition of and respect for central government is thoroughly grafted on the natives of the western portions, while in Bontoc, though the communal defensive element is strong in the towns, little attention is paid to civil regulations, even those made by the leaders of the town, the communal interest, in this respect, being narrowed down to small clusters of people, or *tribunals*, of the same village. In Benguet, and generally in the western part of the Igorot country, the local government is much the same as in western Lepanto, while in the east it generally resembles the conditions of Bontoc.

Every Igorot town has its own court, or what might be called a board of arbitration, composed of the old men of the village, before whom anyone can make a complaint and secure a hearing. This board deals with all classes of cases, from the pettiest of domestic troubles to crimes of serious nature, and the decision of the old men is supposed to be final, though it is rapidly becoming the custom of the more western people to appeal from these decisions to the governor, or an American justice of the peace when not satisfied.

When a dispute arises or a theft is committed among the families belonging to a tribunal, the old men of that particular tribunal settle the trouble, determining the guilt, fixing the penalties for the theft, proper division of property, etc., that is, provided the questions are not of general importance to the town or do not affect people belonging to other tribunals, in which case a selected few of the old men from the tribunals involved come together and make decisions, or, when the question is still broader and the entire town is involved, or a dispute arises between different towns, the representatives of all the tribunals have a session.

I am told that even cases of murder are adjusted in this way, and the price of a life may be measured in cattle or carabaos. Thieving among the people of the same town is punished very severely; for instance, if a man steals a hog and is caught, the penalty is likely to be five hogs, not to the man from whom the hog was stolen, however, but as a contribution to a village feast or *canao*, the particular choice cuts of the meat going to the old men or judges. If the animal is stolen from some other town, the act is looked upon as not particularly reprehensible, unless the thief is caught; the primitive feeling still prevails, even among the more advanced, that all the people not in a communal unit are enemies, or at least fair game to be taken advantage of as occasion arises. Where animals or articles are stolen from another and the evidence of the crime is incontestable, it is customary for the guilty parties to agree to settle with the owners, and the amount to be paid, in money or cattle, is usually determined by the old men. While there is no way of estimating the number of theft cases settled without the matter being brought to the attention of the provincial officials, there are no doubt many such. It is, however, becoming more and more the custom to bring these cases before the provincial governor, that

GOV-SUPERVISOR PACK AND PRESIDENTES, PROVINCE OF BENGUET (IGOROTS).

he may draw up the papers of settlement, and also to appeal to law before a justice of the peace.

The old men or judges not only arbitrate, take evidence, and fix penalties, wholly outside the jurisdiction of the provincial civil government, but they also determine the guilt of suspected parties by recourse to certain ceremonies. The three principal ones are: First, the *podung*, or bloody ceremony, where the suspected and the accuser (the property owner, in case of theft), under the direction and supervision of five judges, have holes dug simultaneously in their scalps, and the one who bleeds the most is declared guilty. The suspected puts up the entire amount of money which the stolen property is said to be worth, the accuser one-half of this sum, and the winner, be he accuser, or accused, takes the money; the accuser, however, may, if he has been forced to go through the ceremony owing to evidence furnished against him by third parties, be reimbursed for his money loss by these "false witnesses." Second, when some one among a number of persons is suspected, it is customary to give each one a handful of dry rice to chew, which is spat into the hands of the judges, and the mixture showing the least saliva is adjudged to disclose the guilty one, as "a guilty man has a dry mouth." And finally, the suspects may be made to thrust their hands into boiling water, and a refusal to do so, or any complaint of pain at the time or afterwards, determines guilt.

The more advanced Igorots believe in one God. They practice no outward expression or form of worship, but by tradition handed down from parent to child, is a positive law that must be obeyed regardless of earthly authorities, the belief that an Igorot is born without sin, and can do no sin except by being taken possession of by an evil spirit, and that it is the duty of each and all to protect one another from these evil spirits. Hence the Igorots believe that after death all will assemble on one mountain, there to spend an eternity of happiness commensurate with their ideas of pleasure and relaxation from the obligations imposed upon them in life. Thus many of the acts of the native tribunals or of the head men, which we naturally consider as punishments, are really the penalties inflicted for the purpose of divesting the poor Igorot of the possession of that evil spirit which has forced him to do wrong. The conception of right and wrong is a quality fully developed in the Igorot mind throughout all conditions of life and fully in accord with the present civilized conception of right and wrong. They believe in virtue in both male and female; they believe in honesty and faithfulness in the performance of any task, no matter how arduous it is made for them by those in authority, and perform these tasks cheerfully.

The wild Igorots believe that the sun is the great god and the moon his little brother; the old people believe in many bad spirits, but the young men are not so much afraid of them. Their god, or gods, are known by the common name of *anitas*. When it fails to rain, when one is sick, when a head-hunting expedition is started, when the crops are planted, when they are harvested, and on many other occasions the canao, or feast of hogs or chickens, may be used for religious ceremonies, though in other feasts dog and carabao are eaten.

All canaos have an accompanying dance, the character of which differs with the particular peoples; the Igorots of the west, or more civilized sections, make few motions in the dance with their feet or their hands, indulging in a shuffling movement of the feet which scarcely raises them from the ground. The music is generally made with a drum of a hollowed log of soft wood five feet in length, slightly tapered at both ends and about eight inches in diameter in the center, with one end only covered with gut; this is beaten upon with both hands, one acting as a damper of sound while the other is used to strike the quick sounding blow. The drum is placed usually over the left leg near the thigh, the player squatting on the ground with the left forearm resting along the barrel and the hand or fingers bent at the knuckles over the

mouth of the drum; the right hand strikes the sounding blows. Besides the drum they use the gantas, or gongs of Chinese make, circular plates of tempered brass, ten to fifteen inches in diameter, with the rim bent at right angles an inch or two wide like the cover of a tin can on an enlarged scale, or, again, like the railroad dinner gongs of the "twenty-minutes-for-dinner" stations; these gantas are beaten with a bit of bamboo or other small stick. The final element in this novel equipment is a piece of iron, wood, or stone which is beaten with another stone in unison with other instruments. It may be readily understood that the music is crude, but, notwithstanding, there is a rhythm and rising and falling cadence to the simple sounds that are pleasing in their barbarousness.

As the music begins, a man leaps into the circle from the surrounding throng of spectators, with arms extended and draped with hanging blankets like extended wings, shuffling in time to the music, and waving his body and arms slightly from side to side; he is often preceded by two ganta players, who also dance. After he has completed the circle once or twice a woman steps from the crowd and follows him, dancing with more motion of the body. The performance is strongly suggestive of that of the male pheasant, followed by the female bird at mating time. The dancers continue until tired, when their places are taken by others.

At large canaos, the dance and feast are kept up almost continuously for three days. One other dance of the western people—sometimes indulged in, also, by the head-hunting people—consists of any number, from four or five to fifteen men, locking arms over one another's shoulders and swaying back and forth while moving slowly around the circle, the leader singing an improvisation; the last few words are taken up in refrain by the rest of the men. As the singing ceases, the women—who have assumed a similar position behind the men—take up the song in answer, in a high treble. I am told that the songs (which often provoke laughter among the crowd) are more or less innocent sallies by the men, to which the women reply in kind. This dance seldom takes place until a well-marked state of intoxication from *tapuey* or *bassi*, fermented juice of rice or cane, has been reached. The drinking of great quantities of these slightly alcoholic beverages is indulged in at all the canaos of the western region, and it usually requires twenty-four hours of steady imbibition of these liquors—if taken alone—to produce drunkenness. When a state of helpless intoxication is reached, the victim stretches out on the ground, covering himself, head and body, and sleeps off the effects, only to renew his attention to the bowl, if the canao is still in progress, when he wakens.

In the eastern and northern country, among the head-hunters, the dance takes on much more action, and many men, each beating a ganta, take part in the moving circle. The dance of these people reminds me strongly of some of the war dances of the North American Indians. Every man in the circle keeps in perfect unison with the others, as well as with the weird music made by the ganta, which is usually their only instrument. In a long closed-up line, they raise their feet high from the ground, bending sharply at the knee, now with their bodies straightened up, now crouching forward, as if ready to spring on the enemy, now moving slowly forward around the circle, or even dancing with slow, backward steps as if fearful of discovery, and again rushing forward with a wild beating of brass, although always in perfect harmony of motion. Often, when this most vivid dance is in progress, a man with the head-hunting battle-ax, or spear and shield, will jump wildly into the rhythm of motion with high steps; or else he moves around the dancers, his face fierce and tense, now retreating, now advancing, swinging the ax close to the ground or again high in the air, poising the spear for thrust or throw. In all, there is such a realistic pantomime of killing the enemy, that the crowds thrill with emotion and give way to blood-curdling yells. Danced in the glare of a pitch fire, with the huge boiling, sputtering pot of meat near by, and the bloody remnants of the feast in evidence, the shiny,

ENUMERATORS, PROVINCE OF LEPANTO-BONTOC (IGOROTS).

sweaty, naked bodies of the dancers and the spectators with their long black hair, the fantastically decorated small basket hat perched on the back of the head, the enlarged lobes of their ears filled with wooden plugs or with dangling ornaments, the women nude to the waist and from the knees, with hair filled with strands of beads, while, peering, squeezing, shoving through the human mass, are innumerable naked children, with bright, black, excited eyes—all these go to make a picture of magnificent savagery.

Among the more civilized people of the western territory head hunting is no longer in vogue and has not been for generations, so the people travel around freely in many districts and down to the coast; but the farther eastward and northward one proceeds the greater becomes the fear among the people of moving about the country, until finally one arrives at small towns in northern Bontoc, where the people do not dare leave the immediate purlieu of their village (an area of 3 or 4 miles, possibly) for fear of losing their heads. There are no sharp lines of demarcation between the peaceful and head-hunting people, but a gradual shading from those who never take heads through those who now and again are guilty of the practice among the villages to the east of them, but who travel freely and peacefully among the people of the western extension, to those who never miss an opportunity to get a head, whether it be man, woman, or child. Even among the worst head-hunting villages one finds that they are friends with one or two other towns—a peace not usually very stable in character, however. The custom of head hunting has left its impress on even the most peaceful people in the shape of watchtowers in some of the towns, where the practice ceased seventy years or more ago.

Again we find among the entire people that the women bear the larger burden of toil, though it is not to be assumed that the men are drones by any means, for they do a large amount of constructive work on houses, dams, irrigating ditches, rice dikes, road repairing, mining, and *cargadoring*, or packing. Nor do we find the line drawn markedly as to what is woman's work, such as we find among the American Indians. The motive for this unequal distribution of labor was probably a defensive one, as exemplified to-day among the head-hunters of the north and east, where women go out to work in the rice fields and camote patches always under the constant protection of the men, who, armed with spears, axes, and shields, watch all day long from salient points of the hills for their enemies.

They enjoy all the humors of life with which they come in contact, are easily stirred to laughter, but, like the American Indian, are stoical under torture. They are rich only in their contentment, living on rice and camotes as a daily diet, never killing an animal, except to invite all their neighbors to the feast, and they enjoy dog meat most of any.

The great mass of the people are poverty stricken, which does not mean that there exists any unusual or abnormal condition, for, as primitive people caring nothing for money, having within their own communal limits nearly all that their mode of life and customs demand for their daily needs, they always have been poor; no ambitions have yet been aroused (except in a few isolated cases) to accumulate or surround themselves with any comforts of life, as measured by the standard of even the poorest Filipinos.

The types of houses among the Igorots differ widely. In the western part of the province they are better built, so far as comfort goes, than in the eastern, being warmer, built of wood, or of *runo*—a grass reed—and raised off the ground. They often have two or three rooms where the eastern house has one; the fireplaces are separated from the sleeping quarters; small benches for beds are sometimes used, or the floors are laid in split bamboo, which gives a fairly comfortable sleeping place. In the country eastward, where the nights are cold, the single-roomed houses often have nothing but the ground for a floor, no windows, and low, narrow doors,

through which they must needs creep on hands and knees into a black hole filled with smoke, and with walls and roof begrimed with soot. Entire families lie huddled closely together on the earth floor at night that they may keep warm. The beds—when they have any—are solid planks, 2 inches thick, 18 inches wide, and 5 feet long, with the centers slightly hollowed out. A block of wood serves for a pillow. In Bontoc the houses are somewhat elaborated in that up under the high-angled, grass-thatched roofs, a room is built for the storage of palay and dried camotes. The family lives on the ground in a room well ventilated in the daytime, as it is open to the air around its sides for a distance of 3 feet between the side wall of planks, 3 feet high, and the overhanging grass roof, all the cooking being done over an open fire in the corner, from which the smoke finds easy access outward. One end of the room is devoted to sleeping quarters, in the shape of a sleeping box extending entirely across one end of the house, say 15 feet long by 5 feet wide and 3 feet 6 inches high. The ground is the floor of this room. At night before the family goes to bed a fire is built on the floor in the box, and when the place is well heated up, it is raked out and the family crawls in, shuts the door tight, and goes to sleep, the temperature dropping from a superheated condition to nearly that of the chilly outside air by morning. To keep the heat in, all the cracks of this sleeping box are often carefully closed with clay, the result being an air-tight compartment, with hardly a breath of ventilation. One is not surprised to find a great many of these people suffer from all degrees of smoke-inflamed eyes, in many cases causing the loss of their sight entirely.

In all the houses to the eastward the pigpen is an important factor and consists of a sunken pit alongside the house, with a hole for the retreat of the animals beneath the house, all of which is walled up with stones.

The diet of the Igorots is rice and sweet potatoes; year in and year out they live on this simple food—rice when they have it, sweet potatoes or camotes when the more expensive crop is short. Meat seems hardly ever to be eaten by the Igorots, except at religious ceremonies, or when they steal it, or again when they catch a deer by running it down and throwing a net over it. When they have meat—be it dog, horse, carabao, hog, or deer—it is consumed, even to the hide, as speedily as possible, it apparently not being ethical to stop eating until every scrap is gone. The entrails are looked upon as delicacies.

During the season of the locusts or grasshoppers a variation in diet is enjoyed, as whole towns, with nets and bags, turn out to gather the pests. After being cooked on stones or fried in earthern bowls, they are eaten until no more can be consumed, and then the remainder of the "catch" is dried in the sun and stored away for future use. I understand that the eating of grasshoppers is a general habit in the islands.

The cost of food stuffs in the main is lower on the coast. Rice is higher in the western part of the province at the present time than it has been for years, and yet the price has never exceeded 6 pesos a picul. In the Bontoc country the standard price has been, and is now, about 2¼ pesos a picul, though it is becoming more difficult to purchase rice at all, owing to the abnormally dry season which has visited the province this year, and resulted in the killing of at least one-half of the young crop. Camotes, or sweet potatoes, sell for a peseta a basket—about one-third of a bushel—and are always obtainable. Hogs are rather scarce and are said to be high in price, a small porker costing 2 pesos and a full-grown medium-weight hog 5 to 6 pesos, while big hogs bring anywhere from 8 to 15 pesos. Good beef cattle sell from 50 pesos a head in a herd to 80 to 100 pesos for single animals. Carabao sell from 60 to 100 pesos per head. Sheep, of which there are few, bring from 2 to 5 pesos per head; horses from 50 pesos for poor animals to 150 for fine ones, though they are hard to find at any price. Chickens are from a peseta for broiling size to a peso for heavy hens and roosters, the majority of the sizable chickens being brought

1. COLLECTION OF DEAN C. WORCESTER.

1. EXTERIOR OF HOUSE OF HEAD-HUNTER IN BANAUE, LEPANTO-BONTOC, SHOWING THE SKULLS OF ENEMIES AND WATER BUFFALO. 2. IGOROT CHIEFS OF NUEVA VIZCAYA. 3. IGOROT PACKERS ON THE BENGUET TRAIL. 4. IGOROTS OF THE POORER CLASS.

into the province by the dealers from the coast; and the same is true of the hogs. Eggs in the eastern section are sold in scant quantities at 15 centavos a dozen, and bring twice or three times that amount in the western section. Meat is seldom sold in the province, but the standard price, when a beef or deer is killed for the market, is 2 pesetas per pound.

As a matter of fact, while these prices for food stuffs are practically as quoted, supplies, with the exception of camotes, are very difficult to buy, the Igorot not being much of a vendor, and usually keeping little more than enough to meet his almost immediate wants. Without a constabulary supply store, or a garden, rice field, or cattle of his own, an American could hardly subsist in the province. Flour is unknown in the province among the people; corn is sometimes raised in small quantities, as are bead-like tomatoes and white potatoes, and beans are planted usually once a year. The wild Igorot does not raise bananas or fruits, but the Cristiano does, in small quantities.

The cost of living of the average family is difficult to determine, but it is certainly very low; exclusive of labor, the average Igorot probably does not spend over 5 pesos per year on himself and family, and this only to buy salt at the coast, some of the vilest leaf tobacco, brass wire, and now and again a spear or a head ax, if he lives in the eastern part of the province. They are actually self-sustaining in the family unit, or at least in the barrio unit, as they weave their own blankets and gee strings and the women's belts, raise their own food crops and animals—the average man seldom has more than one hog—and build and repair their own houses. Estimating the annual expense of a family by the work done we would have in Bontoc something like this, based on wage scale of 6 centavos per day for a man, 4 for a woman, and 2 for each child, or 16 centavos per day if they all labored; a fair estimate for actual ten-hour day's labor might possibly reach one hundred and fifty full days in a year, or 24 pesos for the year for the work required in sustaining the life of a family. In the western sections the rate of wage for private work is two and one-half times as large. The wage scale will be further discussed in its proper place.

The entire indigenous population is stationary, in the sense that they never move from a very limited area, say a few miles, and so strong is this communal tendency and fear of travel that the eastern people seldom ever visit the coast or go out of their own districts, and in some towns they dare not move, if they would, from the narrow town and field limits for fear of losing their heads. Efforts made this year to secure laborers from this province for the Benguet road only succeeded in inducing eight men to make the trip, though the wages offered, with food in addition, were ten times as large as they could get at home in Bontoc and two and one-half times those paid in Lepanto. The rest of the world, to these people, is filled with terrible spirits and bad people. It is quite customary, however, for an entire village to move to a new site, but never more than a few miles from the old one, and then only on serious provocation, such as finding blood on the rocks from which the tribunal is made, a particularly suspicious or peculiar death, or, from the more practical reason, to secure better lands for cultivation.

As a rule, the houses of the Igorots of Benguet, and the yards surrounding the houses, are fairly clean. In person they appear to be extremely dirty. Those of Nueva Vizcaya are said to be extremely filthy, both in person and houses. The latter are alive with vermin, the chickens roost in baskets hung along the roof beams, and the pigs live under the houses. The people rarely bathe, and are consequently afflicted with various skin diseases.

They use intoxicating liquors to a much greater extent than the civilized people and often show the effects of undue indulgence. The use of the betel nut is by no means as general as with other tribes. The climatic conditions are healthful, but the living conditions of the people are the reverse, and it is believed that the death rate

is large, and especially so among young children. The people seem to have been greatly afflicted with epidemics in recent years. The cholera epidemic of 1902 swept through Benguet, claiming 706 victims. It invaded Nueva Vizcaya but slightly, and did not reach Lepanto-Bontoc. In Benguet the cholera was followed by smallpox.

There are said to be 6 illegitimate Igorot children in Benguet, one from a negro father, one from an American father, the others from Spaniards or Spanish mestizos. There are about 30 mestizo Igorot children, the mothers being married according to the custom of the race, which, unfortunately, does not bind the father to his marital relations if he returns to his native land. I give these figures to show to what remarkable extent these people adhere to their traditions regarding virtue.

It may safely be said that the family relations are very close in Lepanto-Bontoc, if it is understood that immorality on either side is not considered a bar to very deep family attachments between the parents and for their children, and previous wrong-doing does not debar either man or woman from contracting strong nuptial ties, whether legitimately united or not. As the Igorots have a marriage ceremony of their own, it is taken that their method of wedlock will be considered legal and the children legitimate. An Igorot woman sometimes has illegitimate children previous to her alliance with one man.

There is no pauperism among the Igorots; they are all comparatively poor, but none are thrown upon a foreign public or government as paupers. If unfortunate and incapable of earning support, they are cared for by the immediate community to which they belong, and so quietly is this done that it is not and can not be made a matter of record. When a person dies, no matter how rich, one-half of all his edible possessions and one-half of his herds and flocks, are eaten by his community, and he, himself, though dead, sits tied up in a chair in the house until this process of dividing up his accumulations is ended, to see that no personal enemy obtains aught of the fruits of his labor. One man watches this dividing for six months after death. Thus property becomes so common to a community that the word pauperism can not be made to apply to unfortunate individuals. One case is known where a man has been dangerously insane for nine years. He has been imprisoned in a shack with one ankle in the stocks during all this time. For these nine years two men detailed from the entire community, each week, have watched him day and night, feeding him and keeping him and his habitation clean. This has become to that community, of course, a public charge, but it seems to be regarded more as a family affair.

The agricultural implements of Lepanto-Bontoc are few and primitive—a wooden, single-handled plow, occasionally furnished with an iron point, is sometimes used in the rice fields, but ordinarily a charred, sharp-pointed stick, wielded by the women, suffices to break the ground, and the feet and hands prepare it for planting. There is no machinery for handling any crop, the rice being all beaten out in wooden or stone mortars with a wooden pestle. Sugar cane is not raised in sufficient quantities to be taken note of, there being no plantations and the crop being confined to a few garden patches among the Ilocanos, and the cane crushed between tiny wooden rollers turned by hand power.

So little has yet been done in Lepanto-Bontoc in an agricultural way, except the raising of rice, camotes, and coffee, that it is difficult to say what crops are best adapted to the soil; and again, the province has a very wide range of climate, from the tropical at 900 feet above sea level, to the distinctly temperate, between 5,000 and 6,000 feet. It may safely be said, however, that with irrigation this province is susceptible of being converted into a veritable garden for the white man, for the raising of such crops as coffee, cacao, tobacco, ilang-ilang, rubber, and hemp. Coffee has been raised on a somewhat extensive scale in times past, being fostered by the Spanish Government and every native being forced to plant a certain area of the same; but the weakness of the plan lay in the fact that the Igorot did not derive any

COLLECTION OF DEAN C. WORCESTER.

1. MAYOYAO IGOROT, "HEADMAN" OF BANAUE. 2. IGOROT. 3. IGOROT HEAD-HUNTER, LEPANTO-BONTOC. 4. IGOROT GIRL IN FERN-LEAF COSTUME. 5. MAYOYAO IGOROT, YOUNG WOMAN.

benefit from his forced labor, the Spanish official, as nearly as can be found out, putting all the profits in his own pocket, the result being that to-day the Igorot looks askance at any proposition made to him for the planting of free seeds. Upon the waning of Spanish influence the coffee plantations rapidly disappeared through neglect and want of irrigation, except those held by private Spanish citizens who continue to live on their lands. It is generally acknowledged that the finest flavored coffee raised in the archipelago is grown in these mountains, but, even at that, very much may be done to improve the bean and the yield. The coffee here is entirely of the Arabian variety, supposed to require shade and much water, but it is furnished with neither; nor is systematic pruning followed, the result being that the coffee puts up, high and spindling, growing rapidly during the rainy season, but being almost killed out and much stunted during the dry period of the year. There is no doubt that were the same system followed here as in Porto Rico—shading with thin-leaved leguminous trees and employing proper irrigation methods—the harmful stoppage of the growth of the tree might be prevented and the two annual crops be largely increased.

Cacao grows luxuriantly, when given the slightest chance for its life, but here again we find the same lack of shade and of water in the dry season.

Hemp, or abaca, has been grown successfully at the elevation of 4,000 feet, and the fiber was long, tough, and of a light-cream color. Ílang-ílang trees stand in many yards and look prolific. Tobacco grows readily and well, but the Igorot seldom plants more than a small patch, and takes little care of what he does plant. Garden stuff of all kinds flourishes amazingly, and, at the higher altitudes, it may be safely said that anything that can be grown in southern California will do as well here.

The method of harvesting rice, the chief crop, is primitive in the extreme. Every straw is cut separately, with a small knife having a blade two inches long and less than half an inch wide, held inside the palm of the hand; each handful is tied around with a blade of grass, and several handfuls go to make up the bundle or *manejo* of commerce. The bundles are transported on the ends of the shoulder carrying sticks, or, when an individual has a large crop—usually a rich Igorot who is a leader among them—it may be built up in small stacks. The method of planting in a nursery, transplanting by hand, weeding, etc., differs in no way from that followed generally in the lowlands, or great rice growing section of the island.

The war made little impress on the crops of Lepanto-Bontoc, and, in fact, war can hardly be said to have existed here. It is true that Aguinaldo fled through this province, stopping at several of its towns, and the insurgents killed for food or carried off a large part of the beef cattle. Neither have locusts taken a very prominent part in the destruction of the crops, though now and again they have appeared in cloud-like myriads, for a few hours, within circumscribed areas, to be driven rapidly onward by the strong mountain winds.

The chief damage done to the crops of 1902 was by drought, the year being pronounced one of unusual dryness. This hurt the rice crop seriously by drying up and cracking the rice paddies in which the young plants had been set out. With the exception of the fields set high on the mountain sides, there was no excuse for the injury to the crops, however, as the rivers of the valleys have sufficient water to wet a hundred times more fields than are planted, if the Igorots would construct ample irrigation ditches. Even though this criticism is made, it should be said, in all fairness to the people, that they are wonderful rice-paddy builders and irrigators, constructing, as they do, tier upon tier of fields, reaching continuously from the river beds to points on side-mountain rivulets a thousand feet above. In artificial landscape effects some of the narrow mountainous valleys rival Japan, and water is sometimes brought by a ditch, by bamboo and hewn-log troughs, for miles. The larger rivers are everywhere dammed to raise the level of the water to the ditches,

and again the water is shunted from side to side of the river by log flumes. However, the one thing lacking is the construction of large irrigating ditches, to build which would necessitate the cooperation of an entire town.

Rinderpest has not been felt severely by the province. Along the main trails from the coast it has made its appearance and carried off some animals. Hogs apparently have died in larger numbers than cattle from disease.

The main trails of the province were in almost impassable shape during the first half of 1902, but, by continuous work on them up to the present time, they have been resurfaced and almost all are now in excellent condition. The bad shape they were found in was owing to the fact that they had received no repairs during the last five years. To keep them up requires a large amount of repair work annually.

One of the principal trails comes from San Esteban, on the coast of Ilocos Sur, through San Emilio to Angaqui, where it joins a trail coming from Candón, by the way of Salcedo and Concepción, and continues to Cervantes and out to the southern boundary line by the way of Mancayán and Suyo. At Cervantes another trail branches northeastward to Cayán, six miles away, where it divides into two branches, coming together again at the town of Bontoc; the left-hand branch goes by way of Bagnén and Sagada, passing over the mountains at a 6,000-foot elevation, and the right-hand road passes through Banco and Sabañgan, along the valley of the Bontoc river, at a much lower level.

From Bontoc an old Spanish trail runs in a northeasterly direction into the Cagayán valley, but was never completed. Another short Spanish trail reaches from Bontoc to Maínit, a town with hot salt springs eight miles distant, and still another runs southeastward from Bontoc, passes the southern boundary line, and has been completed all the way to Bayombong, the capital of Nueva Vizcaya. All the last named trails are in bad condition, as they have not been repaired in years, but they evidence excellent surveying and engineering on the part of the Spaniards, and the last mentioned trail passes through the worst head-hunting country of the Quiañgán valley, where the people of each town are absolutely isolated from the outside world because of their surrounding enemies. Another old Spanish trail, now in bad shape, branches off from the main trail at Sabañgan, and climbs over the great central divide into Sapao, another famous head-hunting region. In the recent trip made by the senior inspector of the province into the northern part of Bontoc, still marked on the map as Abra, there was discovered a wide Spanish trail, in hardly passable condition, running down the Saltán river, and probably starting from the capital of Abra. In the subprovince of Amburayan there are no trails beyond footpaths over which horses can not go, with the exception of the trail from Tagudín, on the coast, to Alilem, the capital, and a poor horse trail from Alilem to Santa Cruz, on the north. In Benguet an excellent trail has been constructed by Igorot labor, from Naguilían in La Unión to Baguió, twenty-five miles. Besides this the towns and rancherías are connected by trails in all directions.

To properly promote the growth of civilization it seems imperative, not only to give thoroughfares to the people themselves, but construct them so that the officials of the province may often and readily come in contact with the people. That the thoroughfare has been the entering wedge for improving their condition and leading them toward better things is evidenced by the fact that the most advanced Igorots are on the main trails coming from the coast, where travel and trade are most marked, and the life becomes gradually more primitive as we get away from these starting points, until finally we reach sections where the individual may not leave his own fireside without danger of losing his life, and the people must turn out in force to cultivate their fields, meanwhile being guarded by armed men. Again, the greatest squalor, filth, and distress are found in the villages that are the least accessible to the main trails.

1, 2, 4. COLLECTION OF DEAN C. WORCESTER.

1. GADDÁN HOUSE OF MEDIUM HEIGHT. 2. DWELLING OF THE MANDAYAS, ELEVATED BEYOND REACH OF SPEARS. 3. AN ATO AT TALUBÍN—IGOROTS. 4. IGOROT HOUSE, BAGNÉN, LEPANTO-BONTOC.

Under Spanish regulations the Igorots were seldom paid for their public work, but were forced into work by the thousands to do the cargadoring for officials, build roads and Government structures of all kinds, without compensation, and this took them away from their agricultural lands to such an extent as to cause more or less injury to their crops. Since they were made to supply their own rations, as well as their labor, a double harm was done. Under American rule every man, woman, or child who works for the Government or for private citizens is paid a wage, which has enabled them to add to their simple wants, so that the general tendency to-day is toward greater prosperity.

Thrift and industry are certainly exemplified in the immense walled rice fields of these people, where walls from twenty to thirty feet high must often be constructed before the land can be leveled into a propagating field, and in the many camote patches which often cover the steepest mountain sides. There are valleys in this province where almost every available foot of land is terraced for rice, and, if not, cultivated continuously for camotes. Religious ceremonies and canaos make a big hole in the possible working days of the year, and the area of land cultivated by one person is seldom large. Every man, woman, and child contributes a share to the labor of supplying the food, and it is common to see the children of nine or ten years working hard in the fields.

The employment for wages in the province is restricted to Government work, mining, and as laborers for the few Spanish and American plantations, though working on equal shares is very common, the landowner supplying seed and work animals.

The wage rate in the mining sections is to-day 50 centavos per day, or three times as great as it had ever been previous to 1902, and it is likely that before another year passes the wage will reach the dollar mark, as it will be forced upward by the demand for labor of the American miners and the limited supply at hand in the districts mentioned. The Government rate of wage for road work is a peseta a day for men and 10 centavos for boys, and every man who cares to work can find employment. Private work is paid for at 15 centavos per day for full-grown men, 10 centavos for women, and 6 to 8 centavos for boys. * * * The labor system in vogue is a difficult one for the employer, as the Igorot never works longer than six days at a time on Government work, and no longer on private work, except in rare instances, when he is replaced by another man from his barrio. This method was inaugurated during the Spanish times, when the labor was not paid for, the needed number of men being drawn from the various towns of a district, who, after working a week, were permitted to return to their homes, when their places were filled by another proportionate levy. As the Government did not feed these men, and as the rich men or leaders of a town always ordered the poorest of the people put to work, it became customary for the town, as a community, to furnish food for their sustenance while working, each family contributing its quota. During 1902 this supplying of food persisted, but it is now breaking down, due to the fact that the residents of a barrio are beginning to realize that a laborer receiving wages should be required to supply himself with the food he eats. However, the "stint week" still obtains, and new men are sent out by the "old men" of the town weekly to replace those who have completed their task. The Igorot at the present time receives his peseta and goes two days without working and without compensation, not minding in the slightest degree the time and fatigue in moving from the scene of his work to his barrio and return.

As a laborer under supervision he is excellent, working steadily for ten hours a day, and certainly, in the few kinds of work he understands—such as ditch building, fence construction, irrigating, and roadmaking—he is nearly equal to the class of foreigners we find doing the same kind of work under gang bosses in America. He must, however, patiently and with good humor be kept under constant supervision,

any attempt to browbeat or abuse him making him sullen and useless, and now that he realizes that no penalties attach to refusing to work he is apt to leave his job if he feels that an injustice is being done.

For packing from Naguilían to Baguió, a distance of 25 miles and a rise of 4,000 feet, they receive a peso and food, ten times as much as during Spanish times. All the furniture, food, and other supplies for the infantile capital at Baguió, are packed in over a mountain trail on the backs of Igorots.

Concerning the Kalingas, a subdivision of the great Igorot people, Governor Gonzaga, the supervisor of Cagayán province, writes as follows:

In addition to the Christian or civilized inhabitants, there are savage races inhabiting the foot of the mountains or their sides, forming settlements distinct from the Christian ones. These races are divided into "Kalingas" and "Aetas." The former have straight hair, are dark brown in color, with a strong, robust constitution, and live in groups which are called "rancherías." They build bamboo houses with palm-leaf roofs, very comfortable, bearing a similarity to the bamboo huts of the Christians, with a door through which to enter, but without any windows, kitchen, or divisions. They consist usually of one room and are used only for sleeping; their clothing consists, for the men, of a shirt which reaches to their abdomen, tight, and almost conforming to the body, with an opening in the chest, and tight sleeves; some of them have a narrow collar and others have none, and bands half a centimeter wide, which they tie in the form of a cravat in order to close the opening; they do not wear trousers, and have their legs bare, and a band twenty centimeters wide and a meter and a half long fastened around the waist, passing one end between the legs and fastening it in the back. The women use a shirt of the same character as that used by the Filipino women, but with less opening at the neck, with narrow sleeves, and petticoats which reach to their heels, and others, instead of a petticoat, use a garment in the form of a sack without a bottom, which is gathered at the waist with a thin band. All the cloth used by them is woven by the women, of cotton grown by the males. All men, as well as women, wear earrings, but the males usually wear them in one ear only, although some, like the women, have them in both ears. The women, especially single ones, wear necklaces consisting of perforated coins or of a transparent paste of an amber color in the form of beads, and bracelets of copper or silver, which they purchase from the Chinese.

The Kalingas, which in the Ibánag dialect means enemies, engage in the cultivation of tobacco, corn, rice, and sweet potatoes, and also in the hunting of deer and wild boars and wild carabaos. They keep carabaos for the field work and saddle horses for their personal use and for excursions. They use the same plow that is used by the Christians for working their fields. As arms of war, they use a lance with a sharp iron point and a wooden handle 1½ meters long, more or less, ornamented with copper or tin rings; a kind of hatchet, thin, like the blade of a knife, 14 or 15 centimeters wide and about 10 long, of an irregular form, with ornamentation similar to the pole of the spear, and a shield of light wood artistically made, 1 foot wide and half a foot high.

Their methods in agricultural work are identical with those of the Christians, which will be mentioned below. They have no definite religion; some worship the sun without explaining the reason why; others, a very great Being, the maker of all the things we see, and others, the souls of their ancestors. The bravest is the king and the oldest are the judges and oracles. They punish adultery and robbery within the settlement, committed by members of the same, but they do not do so when committed in another settlement. They celebrate feasts with dancing and singing to the sound of their instruments, consisting of a ganta, which has the form of a

copper plate which is beaten with a hand like a timbrel, and a flute of slender bamboo, besides a bamboo trumpet; the dances consist of the men and women dancing alone and never in pairs or together. They raise their arms in the air in a position for flying and run around in a circle, adjusting their steps to the time of the music, and from time to time they give piercing cries like the howl of a dog or deer. When a powerful Kalinga dies, the body is placed in a sitting posture in a chair and feasts are held for the time necessary to consume the cattle which the deceased left. The entire settlement attends and others of allied or friendly settlements. They eat, and drink cane spirits, and dance day and night before the body, and after the animals of the deceased have been eaten he is buried; thus, if the deceased is a poor man, having only one carabao, he is buried by the second day. Judging from the physiology of the Kalingas, they must be derived from the Malayan race.

ILONGOTS.

In describing the Ilongots, Gov. L. E. Bennett, of the province of Nueva Vizcaya, who made the enumeration, wrote:

They are all absolute savages and head hunters, and no young man can be accepted in marriage until he has presented his intended bride with a human head. It does not matter much whose head it is. It may be the head of a man, woman, or child belonging to another settlement of their own race, but it must not be taken from a member of their own settlement, which is about the only restriction. After taking a head the man wears a fancy headdress, the frame of which is made of rattan ornamented with brass wire, white horsehairs, red cotton yarn, and shells or buttons Projecting out from his forehead nearly a foot he wears a large red bill of a bird known to us as a "hornbill." A feast and merrymaking is held, and the couple are then considered married after the man has presented his future wife with the head he has taken.

The chiefs of all these settlements stated to me positively that adultery was unknown among these people and that their family relations were very closely drawn. They further stated that they never knew of a case of a young woman giving birth before she had been married.

They can not be said to have any religion, but believe in ghosts, evil spirits, and are very superstitious. They have no well-defined trails or roads, but travel through the dense forests in which they live like so many wild deer, crawling and pushing their way through the dense growth with their heads stooped down and unable to walk erect on account of the growth of vegetation and vines. Where it is possible to do so, they use the beds of the small mountain streams as their roads, as the water obliterates the trail and they can not be tracked by their enemies. They are so accustomed to assassination that they say if they have well-defined trails which they always travel over, their enemies will know where they must pass and will lie in wait for them and kill them, but if they have no trails then no one will know where they will pass. They go along craning their necks up toward the tree tops looking for wild honey, fruits, and other forest products, which they value, as they live largely from the natural products of the forests. They hunt the wild boar and deer with bows, arrows, and lances.

Each person selects his own name when he arrives at a suitable age to take a name, and they name themselves mostly after rocks, trees, mountains, rivers, and other natural objects. Then they change their names frequently if they imagine the old name to be unlucky, or after a spell of sickness, so that the evil spirit will not know them in future.

They are the most primitive people imaginable and have no way of reckoning time. They only count on their fingers up to 10. They can not count off 8 men, for example, without reference to their fingers, but have to take each man and stand him off to one side, and then count them one at a time, checking them off on their fingers. They gather forest products to trade with the Christians for cloth and other objects, and make appointments in advance to come down to some half-way place, neutral ground, and make the exchange. The day for the meeting is reckoned in the following manner: If the meeting is to take place eight days hence, the Ilongot ties eight knots in a string, one for each day, and then as time passes he cuts off one knot each day, and when only one knot is left on the string he knows that on the following day he must keep his appointment, and starts away on his journey with his beeswax and articles for trade. Both men and women wear the hair long and generally keep it tied up with red cloth, wire, and horsehair.

Dwelling houses of the Ilongots are built on wooden posts from five to nine feet off the ground, and are constructed of bamboo, rattan, or cane, with thatched roofs of long grass. No nails and little wood are used in the construction, and about the only tool is a long, heavy bolo. The houses consist of one room only, and are from eight to twenty feet square, with a fireplace for cooking laid out in one corner by plastering several inches of mud over the floor, which burns hard with the heat of the fire. They are very fond of dogs and have as many as 20 to one small shack or house, all of which sleep on the floor with the family. Fire is started by the use of flint and steel. Skulls of animals are extensively used for decorating the houses inside and out. The people do not live in one place for more than a year or two. They clear enough trees to plant a few sweet potatoes and other products to supply their wants, and after two years at most they move to a new place, and are continually changing the names of their settlements.

The principal articles of food used are sweet potatoes, bananas, rice, gabi, corn, and certain fruits and nuts of the forests. They eat with their fingers. They distill a kind of rum from the sugar cane and are rather fond of intoxicating drink when they can get it.

The Ilongots depend upon hunting to secure their meat. They hunt deer and wild pigs, which are abundant, and they are fairly good shots with their bows and arrows. For hunting they use dogs, nets, bows and arrows, lances, and dig pitfalls, etc. They also use poisoned arrows, the poison for which they extract from certain plants and trees which they know in the forests.

These people cultivate the soil to a very limited extent, and the tools used are wooden spades and knives. The women work as much or more than the men at the cultivation of the soil. The products grown are sweet potatoes, some rice, bananas, gabi, tobacco, corn, sugar cane, a few onions, and squashes. Land is so plentiful that they never quarrel about property rights. They seem to know nothing about minerals or mining, and if any minerals exist in their district nothing is known about them, and it would be a very difficult country to prospect. They gather considerable quantities of wild honey and beeswax. They eat the honey and trade the wax to the Christians for cloth, etc. The beeswax is used for making candles.

These people are at constant strife with each other. A little group of four settlements, composed of 200 or 300 people, may be friendly with each other; but 5 or 6 miles away, the next three or four settlements of the same tribe and language are certain to be at constant warfare. Fighting is never carried on in the open, but they depend entirely upon assassination and ambush. They set pointed bamboos and spring guns for each other in places known to be traveled, and use spears and bows and arrows with poisoned tips when they fight. They always kill the wounded and cut off the heads, which they take home as trophies. There is no slavery known except in rare instances where a member of one settlement is able to capture a child

belonging to an unfriendly settlement. Then the child so captured is not generally sold but remains the property of the captor and is treated just like the other members of the family, and finally marries into the adopted tribe and the offspring are no longer considered as slaves.

These people live together in small settlements. The houses are very scattered and hidden away in inaccessible places selected on account of strategical location, and as much as possible out of sight.

By mutual consent of a majority of the inhabitants one person is selected as chief or captain of the settlement. He is generally the largest property owner in the settlement, but may also have been selected because he is considered the bravest man. Generally the "bravest" member of the settlement is also the largest property holder. They have a well acknowledged but unwritten code of common law regulating the payment of debts, property rights, marriage, divorce, and adultery, and are generally very moral people. Property may be owned by either men or women. If marriage is contracted with a woman who is a property holder in another settlement, then the man must go and live in the settlement of the woman he intends to marry. If the woman has no property and the man is a property owner, then she may go and live in the settlement of her husband.

The chief diseases are skin diseases, fever, smallpox, and consumption. They seem to have no ideas of medicine or treatment of disease. Diseases are attributed to the influence of evil spirits. Wounds are treated by the application of certain leaves of trees. They bear sickness and pain with stolid resignation and do not complain. They have no doctors or medicine men. The dead are buried in a sitting posture in any place selected for the purpose by the friends or relations, and they have no special places set aside for burying grounds.

These people have very few domestic animals and no cattle or horses. The animals they possess are dogs, pigs, chickens, and a very few cats.

The industries of this tribe are very insignificant and limited to collecting beeswax and making it into tapers or candles, and to the collecting of certain other forest products which have a value among the Christian settlements. They make a few mats of grasses and fibers, baskets and bolos, which they buy from the Christians and remodel according to their own ideas, adding ornaments in brass to the handles and sheaths. They also make their own arrows of steel and hard wood and some spears or lances.

MANGYANS.

This wild people, occupying the mountains of Mindoro, are probably a mixture of Negritos with other Filipinos, and possibly in some localities there may be a small infusion of white blood. Concerning them Capt. R. G. Offley, U. S. Army, supervisor of the census and governor of Mindoro, reports as follows:

They are non-Christian, but not savages by nature or habit; will run at sight of a stranger if his coming and intentions have not been previously announced; their dress consists of the "gee" string, with the addition, in the case of the younger girls, of some forty or eighty yards of bejuco (rattan) wrapped around the waist. They are divided into several tribes, chief among which are the "Buquit," "Bañgon," and "Batañganes," who roam in bunches or by families, the oldest acting as chief; are willing workers and make nearly all the bancas used in the province; have no knowledge whatever of agriculture, and do not know the value of money, a fact of which the Filipino avails himself by giving a handful of salt for a banca, while the price of a small working bolo to a Mangyan has been ten years' servitude.

I recently visited the "Batañganes," who were supposed to be the celebrated "White Tribe" of Mindoro, but failed to find any trace of white blood more than a decided Roman nose. Among them, as among the Filipinos, some are more or less white, due to protection from exposure, but of the marvelous tales as to their origin I do not believe a word.

TAGBANÚAS.

With the exception of a few thousand Christian Filipinos, the island of Paragua is sparsely peopled by members of this tribe, a few Bataks, and by Moros. The Moros are settled upon the coast of the southern part of the island, while the Tagbanúas occupy the mountainous interior.

The following account of them is taken from the report of Maj. L. A. Lovering, U. S. Army, who, as military commander of the district, acted as supervisor of the census:

This tribe is composed of Malays, who are timid and superstitious, but are commencing to associate with the Filipinos and Americans. They have a little education, and an alphabet of their own, which resembles the original Tagálog alphabet. When they write, it is generally upon bamboo sticks.

These people raise upland rice (palay), gather honey for food; beeswax and the almáciga or fossil dama for sale, and make nipa for their own use and for sale. Their houses are very small, or sometimes only shelters without sides. When their palay and honey give out they subsist on roots, camotes, and a very few vegetables, which they cultivate. They are governed by chiefs called "maguerares" and a council of old men. The relations of the chiefs and council are not thoroughly understood. They are inoffensive and cause no trouble. They generally live in one place one season, when they desert their huts or shacks and go to another place, cut the brush and burn it, and raise palay one year. They have no cattle or carabaos, and it is easier to clear the brush than to get rid of grass and weeds. They leave their houses and build new ones when a death occurs in the family or house. They generally live in the foothills or mountains. The Palauanuas are merely a branch of the Tagbanúas, speaking the same language, or a dialect that varies a very little from the regular language. They live on the coast, associate with the Moros, and many of them have been converted to Mohammedanism.

In the mountains near Bono Bono there are some Tagbanúas who hold no communication with other people, not even with other Tagbanúas, and they allow no one within their mountain territory. The Moros and other Tagbanúas are afraid of them and their blowguns, from which they are reported to shoot poisoned darts. They trade with other tribes in a peculiar manner. Each person puts his goods (cera and almáciga on the part of the wild Tagbanúas, and bolos, cloth, tobacco, etc., on the part of the Moros or Tagbanúas) in a designated place, and then the trading is done at a distance generally greater than the range of the blowgun, and then each person separately takes away the goods belonging to him after the transaction is closed.

All Tagbanúas make and use blowguns made of a small bamboo. They shoot small darts which, in some cases, are poisoned. They kill birds and small game. They all have bolos, which are bought from the Filipinos or Moros.

The Tagbanúas raise a large quantity of rice. They make and use hard wood and bamboo implements in agriculture. Bolos are used in clearing the land of brush and trees. The Tagbanúas near Puerto Princesa are buying and using more articles and implements every year.

1, 2. COLLECTION OF DEAN C. WORCESTER.

1. TIRURAY DANCER AT COTTABATO. 2. ATA OF DÁVAO. 3. GROUP OF MANGYANS OF MINDORO. 4. MANGYAN, PROVINCE OF MINDORO. 5. MONTESES, PROVINCE OF MISAMIS.

In 1900 there was an epidemic of smallpox, which continued until 1902. It apparently ran its course and died out. Two-thirds of the people of many villages are reported to have died of this disease.

The Tagbanúas use very little intoxicating beverages, but all use betel nut. They live to an average old age, although their habits and mode of living would not appear to be conducive to longevity. They have little or no property. They generally wear only the breech clout, except when those who live near ports or barrios come in to trade, when they wear Filipino costumes.

They are generally peaceable among themselves, and timid when brought in contact with Filipinos or whites.

TIRURAYES.

The following account of the Tirurayes of Cottabato is by First Lieut. G. S. Turner, Tenth U. S. Infantry, who has been among them and took an active part in collecting information for the census:

The country inhabited by the Tirurayes may be said to be triangular in shape; it is bounded on one side by the Río Grande (south branch), on the second side by the sea, and on the third by a line drawn from Taviran, on the south branch, to the mouth of the Little Tran river.

On the valley side of the mountains near Taliyan there are a few more of these people, estimated at about 200. These Taliyan Tirurayes differ slightly from the larger part of the tribe in language, manners, customs, etc. They do not intermarry with the tribe proper, and have very little intercourse with them. Throughout this paper they are not included in any general statement. The little information I have of them was obtained from Cafaduan Bruno, at Cewan. I have never seen any of them, nor have I visited their places.

The Tiruray country is wooded and mountainous. There are two well-defined ranges, one running along the coast and the other on the west side of the Río Grande valley. The intervening country is exceedingly close and broken. We saw no open valleys of any extent, except the one near the head of the Matabal river.

The Tibuan, Matabal, and Malibakac rivers are the only streams of any size, although there are innumerable brooks and creeks throughout the entire district. The Tibuan and Matabal are navigable for small vintas a short distance from their mouths, but the Tirurayes rarely venture upon water.

The houses of the tribe are invariably built on hilltops or on almost inaccessible slopes and are raised from ten to fifteen feet from the ground. They are supported either on small poles or upon a tree trunk which has been cut off at the desired height. They are thatched with nipa or grass and they may or may not have sides. Entrance is effected upon a notched pole, which is pulled up at night. Bejuco or vines are used to hold the timbers, etc., in place. The floors are made of poles, bark, or split bamboo. The entire structure is rickety and unstable.

The government of the tribe may be said to approach nearer the patriarchal than any other defined form. The power to adjudge fines (apparently their only regular means of punishment) and settle disputes of all kinds rests with the head man, or cafaduan, of the village. There are several grades of these cafaduans, some higher in the social scale than others, but all apparently exercising an equal jurisdiction in their particular bailiwick. These positions are all inherited, passing through all the sons of a cafaduan before it descends to the male children of the eldest son. Robbery, adultery, and crimes of a like nature appear to be the main offenses. Regular fines of a certain number of spears, drums, ornaments, etc., are recognized for the various crimes. These fines are imposed by the cafaduan, who is, however, assisted in judging the cases of the village by the old men.

The people live in family groups varying from three to eighty families, most of whom are more or less related. The houses are not closely built together; they occupy in some cases several miles of country. Each ranchería has its cafaduan, whose power is limited to his own following. Disputes between individuals of different villages are settled by the cafaduans of the interested people. While these various groups are nominally family ones more or less outside blood comes in by marriage. They recognize the evils of intermarriage and usually the contracting parties are from different villages.

Marriages are habitually arranged by the families of the young man and woman, frequently without their knowledge. The initiative is usually taken by the father of the young man. A dowry or purchase money, the amount depending upon the attractions of the bride elect, must be paid to the bride's father before the contract can be completed. The entire marriage ceremony, which consists of dancing, feasting, etc., may take two or three days to complete, but the actual wedding itself is very simple and short. All the ceremony is performed without the aid of priests or religious rites.

I am inclined to believe that the formal ceremonies of former times are frequently dispensed with these latter days, the dowry being the main requirement. This is the case particularly among the people who have been in touch with civilization for a number of years. In fact, I believe that a great number of their superstitions and beliefs, while they are still regarded with more or less respect, have changed or been greatly modified through contact with the Filipinos, Spaniards, and to some degree with the Americans.

They have among them a form of priest called a "balian." At present there are few of this class. They are supported by the people, but apparently have little influence among them. These balians claim the power of leaving the world, ascending to heaven, and communing with God. They also say that God descends and partakes of food in their houses. The people are thus fooled into bringing food, which the balian promptly uses. These priests have some ceremonies, such as dances and songs. They pretend at times to go into trances and to predict events in the future. I find a great many of the people who ridicule balians and their claims; their power is on the wane.

The people believe in a hereafter, both good and bad. However, they all fully expect to obtain the good part in the world to come. They have traditions of a number of good people who lived in former times, but none of them partake of the nature of a divinity. I know of no religious ceremonies performed at stated intervals, or from day to day. Their prayers are apparently addressed to the evil spirits and devils, in which they have firm belief. They have numberless charms for self-protection, for acquiring beauty, inflicting harm upon their enemies, foretelling the future, etc.

Their journeys and undertakings are frequently dependent upon the song of a kind of wood pigeon called "lemugan." The note or the direction from whence the song is heard signifies a good or bad omen. This particular superstition appears to be deep rooted in all the people.

Polygamy is practiced to some extent, but as a rule, the people are too poor to afford more than one wife. Slavery for debt is also recognized among them, but the cases where it is actually imposed are rare. It usually takes the form of the seizure of the children of the debtor after his death.

The women, while they are fairly well treated, are required to do the larger part of the work. They assist the men in clearing the ground and planting, but harvest the crops alone. They are required to carry all the water necessary for the household, and as the houses are usually built at considerable distances from the source of supply, this is no light task. They make the baskets used in carrying their products

about, and also make most of the mats supplied to the Cottabato market. They do the cooking, and generally have charge of the household work. The men make their bows and arrows, hunt, prepare snares and traps for deer, pigs, and birds, search for roots and herbs, and assist in clearing and planting. They sometimes carry the products to the market, but usually the burden is borne by the women. As a rule, the families are small; whether this is natural or by design I am unable to state. It is claimed they understand the preparation of a medicine from roots and herbs which prevents childbirth. They have no class of medicine men or doctors, but the old men and women are generally more or less familiar with the use and preparation of plants and herbs.

The Tamontaca, Cusion, and other Tirurayes adjacent to Cottabato, trade directly with the Chinamen, the coast Tirurayes trade with the Moros and Chinamen, while the people of the interior use the Manobos as middlemen. They obtain little from outside, but, such as it is, it comprises nearly their entire possessions.

Their weapons are spears, krises, bows and arrows, bolos, and a few blowguns. They make only the bows and arrows and blowguns. Their earthen pots for cooking are procured outside. They do not understand spinning and weaving. The clothes of the men consist of a pair of short trunks and a shirt, with a handkerchief wrapped around their heads; for the women, a sarong used as a skirt and a jacket somewhat similar to the men's, but shorter and worn very tight. The sarongs are usually made by the Moros and the shirts and trunks are bought from the Chinese. Both are made of cotton.

The men and women all chew betel nut, and blacken and file their teeth. Along the coast the men frequently remove the inner part of the lobe of the ear. I have never seen anything in the nature of an earring worn in the lobe. The women, on the contrary, wear most elaborate chains of beads and shells suspended from their ears, passing under the chin from one ear to the other. They also wear necklaces of beads and shells, mounted sometimes with silver. They encircle their waists with belts made of spiral brass pieces, joined sometimes with beads. The ankles, lower leg, and wrists are covered with brass rings. Some of the young girls must wear pounds of them. The hair is done up in a knot high on the head and a thin bang is left hanging on the forehead. The lips are frequently colored red. As the jackets of the women rarely meet across their bodies and rarely reach the sarong below, the effect of all this ornamentation is very strange.

The men wear their hair either long and tied up in a knot under their handkerchief, or cut short. They have little beard or mustache, and wear no ornaments. The ornaments used by the women are bought from the Chinese, either in bulk or ready-made. The brass "agun," or drum, is also purchased from the Chinese.

The tribe is poor, and a large part of the little money they make goes to purchase these senseless ornaments, drums, etc., for which they pay prices far beyond their means. With the exception of the few mats and baskets made near Cottabato, their sole means of revenue are their crops and what little rubber they are able to collect. Their only domestic animals are dogs and chickens.

Their crops consist of rice, corn, onions, a little tobacco, and sweet potatoes, the latter comprising probably four-fifths of their entire product. They rarely plant more than one or two years in the same place, the houses being abandoned and new ones built near the new fields. They invariably plant in uncleaned land on hilltops or along steep slopes. The brush and trees are cut down and burned and the crops planted among the charred logs and stumps. The clearing is not done without great labor, and frequently takes several months. I know of no reason which makes such a wasteful change necessary, for I am reasonably sure that the ground is rich enough to stand several crops. Large areas of their country have in this manner been entirely denuded of trees. Planting is done with sharpened sticks, the entire village joining

in the work. In the interior the fields are worked more or less by the village as a whole, but nearer civilization the individual place is in evidence. Money is not used except when they come in contact with civilization. They raise only enough to supply their immediate wants, and they store up no riches except tom-toms, arms, and ornaments for the women.

They speak a language of their own. It contains many Moro words, and is, I am told, somewhat similar to the language of the Manobos.

The people of the tribe are not industrious, but are fairly honest. Their morals, particularly with reference to the women, are bad. While not fighters, they hardly can be called cowardly. Suicide is frequently threatened, but rarely practiced among them. They have little strength of purpose and are easily led. They do not cling tenaciously to their original manners, customs, or modes of life. They are exceedingly superstitious and have little religion and few ceremonies. They are good-natured and generous. They are not cruel and treat their children kindly. Physically they are inferior to the Moros.

In general they are ignorant, shiftless savages, ruled by superstitions and fear, with little moral or legal restraint upon their desires or passions. They were formerly much preyed upon by Moros and Manobos, but they are troubled no longer in this respect.

SUBANOS.

This is a pagan tribe, found in the western part of the island of Mindanao. Its range includes the mountains of the peninsula of Zamboanga, and extends to the eastward slightly into Cottabato, Misamis, and Dapitan. The Subanos are found in the valleys near the heads of the rivers, while the Mohammedans live near the coast.

The number of this people is 23,583, and they are distributed as follows among the districts in which their habitat is included:

Dapitan	5,995
Cottabato	1,000
Misamis	3,418
Zamboanga	13,170

The following description of this people is derived from reports presented by Messrs. Emerson Christie, F. P. Williamson, and Frank W. Redding, who served as enumerators of the wild people of this district.

The Subanos are lighter in color than the Mohammedans of the coast. Their countenances are mild, their features are large, with flat noses, the hair is long, straight, and black, and the limbs are well rounded, the young men and women being not uncomely. The lightness of color of this people is probably due to the fact that they are little exposed to the sun's rays, since most of their life is spent in the depths of the forests. They are of strong and robust build, and are capable of enduring the hardest physical toil. The women are graceful in form, pleasing in appearance, and would be comely were it not for the universal habit of grinding and blackening the teeth.

The Subanos are not cleanly, either in their persons or their habitations. They build houses on poles, with roofs of thatch made from the leaves of the sago palm. The refuse from cooking, and trash of any kind that accumulates in the houses, is thrown through the cracks in the floors, which are made of wooden slats. The floors

are four to six feet above the ground. It is customary to have, under the house, several pigs, which are supposed to live upon what drops from the floor above.

The men wear long trousers, very wide at the bottom like bloomers, and a tight-fitting jacket. Their hair is also worn long. They always have with them their long working knife, which they wear in a wooden sheath at the side. When they go on a journey, they carry a long, wicked-looking spear, which they would never have the courage to use, unless it were on a wild hog or deer. They are fond of bright colors in clothing and jewelry, and proudly display, on the fingers of one hand, several brass rings with large green or red glass settings. The women wear folded around the waist a piece of cloth, which falls below the knees, and also a close-fitting jacket. Their hair is worn long, and with it they mix a braid of equal length made from the fiber of some plant and dyed black to match the hair, with a dye made from lemon juice, old pieces of iron, and the juice of a tree. They chew betel nut, as do the men, with shell lime and the leaf from a certain vine (bunga).

Unlike the Moros, polygamy is not practiced. They are monogamous, have a high respect for the marriage tie, and are strict in the marital relation. The women are moral, comparatively, and infidelity is of rare occurrence. Fines are imposed as punishment for seduction and illicit cohabitation, which fines are usually paid in cloth and go to the timbuay who imposes the fines. In their domestic relations the woman is treated as an equal, and is usually deferred to in most matters by her husband. Families, even when two or more are occupying the same house, live in concord and union. The children are docile and obedient to their parents, who in turn treat them with the greatest kindness and leniency.

On reaching the age of puberty both male and female grind and blacken the front teeth, as does the Moro. Within ten or fifteen years thereafter the teeth have been ground down to the gums; occasionally these are replaced by false ones ingeniously shaped out of carabao horn and attached to the stumps of the natural teeth. These are not very serviceable, however, being placed there for appearance only. The lobe of the ear of the female child is pierced when quite young, and a piece of coiled nipa leaf inserted to stretch and enlarge the hole thus made. As the child grows, the ear piece is made larger and larger until, at the age of fifteen, the hole has been gradually stretched to the size of a peseta coin. This operation, extending over so many years, must be accompanied by considerable pain, but it is endured with great fortitude, for, as they think, it enhances the beauty. At an early age the male child undergoes a burning operation upon the arms and chest to teach him endurance under pain. If this has been neglected, when the child becomes a young man, he self-inflicts it, for without these scars to show, he finds it difficult to get a mate, as the women scorn the men without scars.

The Subanos are pagans, densely ignorant and superstitious. From time to time they perform certain ceremonies to ward off evil and sickness, and funeral obsequies are solemnized by the shedding of the blood of the pig, accompanied by charms and incantations. They erect, close to their houses, what might be called "totem" poles, upon which are placed small models of boats and houses, carved out of wood, in which are put food and drink as a propitiatory offering to some powerful spirit or deity whom they greatly fear.

Many and curious are the traditions existing among this people which have been commemorated and handed down in songs composed usually in a boastful and laudatory strain, one tradition, for example, being that the Subanos of Sibuguey were the first people, and from that place their offspring gradually extended over and populated the earth.

The Subano is timid and unwarlike. Living as he has for generations in subjection to the Moro datos, his spirit is cowed. He pays tribute and obeys the orders of his

dato without question or thought of resistance. He is, however, an adept at lying and practicing deceits, and by a clever exercise of these qualities very frequently escapes his tribute paying.

In a Subano's dwelling is seldom found more than one or two days' provisions, which, with a few crude cooking utensils and dishes, sleeping mats and pillows, make up the contents of his abode. This does not represent, however, the true extent of his belongings, because his articles of value and his stock of palay and provisions he always keeps in a small hut concealed in the woods some distance off, to which there is no betraying trail leading, and which is visited by the owner only as necessity requires. This concealment he deems a necessary precaution, as otherwise, if it became known that he had a surplus, it would be taken from him on some pretext by the Moros.

Their language is a dialect of presumably Malay origin; it is crude, slightly developed, and most difficult for a stranger to learn, in this respect materially differing from that of the Moros, a working knowledge of which can be readily acquired. As far as I have been able to discover, they have no written language of their own, and I have never yet met a Subano who could either read or write in any language.

They have no schools and make no attempt at educating the young; in this respect they are savages pure and simple. Most of these people speak the Moro tongue, which they have acquired in their intercourse and trade relations with the latter race.

Mr. Christie talked with several of their medicine men, named balian (from binduan, a woman who chants incantations). Some of these balian claim to be able to summon the divata (from Sanskrit, divata, a minor god), or spirit whom they worship. Mr. Christie was present at one of these functions, which took place, as always, at night. The Hadji, some Subanos and himself were in one of the two rooms of the divata house. In the next room, quite dark, was the balian.

It was 1 o'clock in the morning before the divata was present; at that moment the Hadji and Mr. Christie had gone out of the divata house, at the suggestion that possibly the presence of strangers might keep the divata away. Word was sent them that the divata had appeared, but they were required to promise that they would not punish the balian for his part in the affair. The promise being given, they returned to the divata house, where Mr. Christie asked some questions, through an interpreter, in the Subano dialect. Then the balian put the question to the divata aloud, and after an interval the divata (as the natives believed) answered aloud in the Subano dialect, which was translated. The alleged voice was strikingly different from that of the balian, and the latter either had a rare control over his voice, or had an accomplice. According to the divata's replies, there are male and female divatas, the males ruling the men here below, and the females ruling the women. The divatas also have children, and altogether, are a great multitude, and acknowledge a king divata and a queen. The divata who was speaking refused to give the names of the king and queen, saying that he (the speaker) was only the younger brother of the king, and had no authority to give the names. The divata made this excuse so often that it was understood, after a short time, that no more questions were desired, and Mr. Christie and his party withdrew.

The Subanos believe sickness to be caused by some divata, and the balian is called in to sacrifice a cock, put some saliva on the patient, and make passes with a stick. Before planting, also, frequently a cock is sacrificed. When a man dies, the family, after some weeks, has a cock sacrificed, and has an orgy. Until then the ranchería is in mourning.

The chief of a community is called a timbuay. He settles their petty disputes, arranges their marriages, and looks after collections of all kinds for the Moro dato of the district in which he lives. These timbuayes are, for the most part,

appointed by or with the consent of Moro datos, on account of influence among their own people or as a matter of inheritance, as the timbuay of Siay, called by his own people "Dato Lucas," by his real name Boutas, whose father was timbuay of the Subano settlement on the Siay river. This Boutas is rather unfortunately located, as he is living in a section which has been ruled for several hundred years by Maguindanao Moros, descendants of Caliph Saligay Abusu. He pays tribute to the Sultan of Mindanao, the rightful landlord, who fines him for obeying the orders of Dato Saculuran (Gondoon), who collects from him in the name of Rajah Muda Mandi, who has great influence with the American authorities. As Dato Mandi's territory was never supposed to extend, even by American authority, beyond Bulúan, trouble would have come out of this long ago if it were not represented that Dato Mandi was backed in all of his dealings by the American Govermennt.

The relations existing between the Subanos and Mohammedans of this district do not date from to-day, but go back into the past. The region assigned to Mr. Christie was formerly part of the dominions of the Sultans of Mindanao. Under their régime the Subanos had to make them or their lieutenants certain contributions, which were called siwaka and pamuku. The siwaka consisted of a tax, payable in upland rice and other Subano products, levied on each Subano married couple annually for three years after their marriage. After the three years were over the couple was freed from this burden, but became liable to the peculiar form of tax called pamuka. This was collected as follows: The sultan or one of his datos sent a Subano ranchería a gift, and the Subanos were under obligations to send a gift in return, but it was required that this gift be double the value of what the sultan or dato had sent. This was merely a less humiliating way of levying contributions. If the Subanos did not have enough to repay double the gift, and preferred to send it back, they could do so, provided they added about half its value in their products to placate the dato or sultan. In order to see that siwaka and pamuka were promptly paid, taxgatherers were sent to live among the Subanos. These taxgatherers, known as panguku, were expected to live on what they could squeeze out of the married young Subano men and women. After they sent gunboats there the Spaniards tried to stop all those payments to the Moros, but succeeded only partially and locally. As soon as the Spaniards left this country the system of graft revived stronger than ever, and the last state of the Subanos is worse than the first. To-day both siwaka and pamuka are exacted, but the siwaka is used more by the Sultan of Mindanao and the datos about Sibuguey bay than in Mandi's territory, as Mandi has a more effective system. During the past year a peculiarly flagrant case of pamuka was perpetrated by one of Mandi's subjects, although the amount was small. Panglima Sahah, one of Dato Saculuran's satellites, sent a small lantaca to the Subanos of Gúibauan to exchange for fifty batils, to that returned the lantaca, adding thereto twenty batils of palay. The special impudence of this transaction arises from the fact that Sahah is not the overlord of these Subanos, nor is he even a dato. But the Subanos feared to disappoint a satellite of Saculuran.

A third form of contribution comes in the form of bubuhis. This differs from the siwaka in being a perpetual annual tax, instead of only for a term of three years. This form is that employed by Mandi. So far as my knowledge goes, there are five timbuayes who pay him bubuhis. The amount is 150 gantas apiece. As these gantas of the bubuhis are twice as large as the gantas of commerce, according to information given by Nuño, we may call the amount 300 gantas annually from each timbuay. To collect this tax, Mandi also has panguku. But the above forms of taxation, for which no equivalent in service is given by the Mohammedan chiefs, are probably less discouraging than the constant "squeezing" and violence to which the Subanos are subjected, simply because they are not only timid, but worse armed than the Moros, and because, not having the command of the sea, like the Mohammedans,

they can offer no real resistance. Of cases of arbitrary and unjust dealing so many have been brought to Nuño's attention, and to Mr. Christie's, that it would take a pamphlet to relate them all. Merely a single illustrative case is given, not because it is worse than others, but because it is recent, having taken place during the time this census was taken.

When Mr. Christie was in Bulúan on census work, in the last part of April, he asked the Joloanos there whether they had any complaints to make. They said they had; that five days before a whole ranchería of Subanos had run away from the neighborhood without paying their debts, and had placed bits of sharpened bamboo in hidden places of the trail to hinder pursuit. As the Joloanos were unable to tell him the amount, etc., of the debt, and as their reputation was well known (he was at this moment in a house formerly the residence of a Filipino or mestizo killed by these Joloanos about three years previous), he was not satisfied with the Joloano version and desired to make an investigation. For this purpose he tried to find where the refugee Subanos were, but not until some weeks afterwards, while taking the census in the neighborhood of Point Quipit, on the opposite side of the peninsula of Zamboanga, was he able to find them. He finally found them at the ranchería of Panglima Panganudan, a Kalibugan, or a Subano, and, despite the Panglima's terrified protestations that he did not even know where the refugees were, Nuño and Mr. Christie walked into a house and found them within. As soon as the friendly nature of the visit was explained, a woman, wife of the Panglima, one of the refugee headmen, threw herself first at the Hadji's feet and then at Mr. Christie's, begging them not to betray them to the dato or his Bulúan satellite. When they had assured the refugees that they had nothing to fear from them, the two leaders of the refugees, Panglima Anung and Timbuay Ookukh, came forward and told the following narrative, which is given exactly as given by them, save that it has been condensed:

"If the Subanos owed, say, 50 pesos' worth of product to Husein and paid him 20 on installment, Husein would deny that it had been paid and exact the whole sum over again. For example, the Subanos owed 2,000 small pieces of crude hemp, of the total value of about 4 pesos. As they did not pay this on the day set by the Hatib Husein, the latter seized two carabaos of the Subanos as a fine and informed the Subanos that the debt was now 20,000 pieces; and the Subanos not only paid this, but were mulcted the two carabaos besides. Now, after this lesson, Timbuay Ookukh and Panglima Anung told their people to contract no more debts whatever with Husein's people, and also begged Husein to do no more credit business with the Subanos, save in the presence of the Subano headmen. Husein then told the Subano chieftain that he would expel him from his position if he stood in the way of his "comercio," and he continued to force men to buy from Joloanos on credit, later charging the amount to the Subano chief. By this means he managed to get the Subanos in his debt again to the alleged extent of 300 bolas of gutta. The drought made the sap stop flowing freely, so this gutta could not be given. Then Husein said the Subanos could pay with tangal. All the Subano workmen were sent out to get this bark, but Husein said that the women also must go out to work for him. He also became menacing and, seizing Panglima Anung and Ookukh, held them for a time as security. Together with these headmen were seized three other Subanos, two of whom, named Asoh and Atug, were tortured, but managed later to escape; the third, named Buani, is still in Husein's possession. Finally, seeing that they were practically becoming slaves, the Subanos, after getting out a great amount of tangal for Husein, outwitted the men set over them as guards and abandoned everything, striking across the forest for the other side of the peninsula."

The foregoing complaint, which could in its essential features be duplicated many times, is due to an abnormal state of society. The Mohammedans, save a very few tribes, do practically no agriculture, yet they must have rice to live; hence a great

part of these abuses. The most permanent way to remedy these evils would be an economic progress consisting in the semiroving Mohammedans settling down to cultivating the soil. Hadji Dato Nuño, himself the son of a pirate chief of Simisa, can command the cooperation of some 200 fellow countrymen who, while in exile in Luzón, learned the art of producing tobacco. The Hadji's idea is to start a large tobacco farm—he has already experimented with the plants, and they do well—and thus make cultivators and money earners of his people. The death of the carabao by pest, however, will make it almost impossible for him to undertake this work unless the Government could see its way to loaning him a modest sum of money on easy terms. A better investment could not be made by the Government.

As a whole, the Subanos are an industrious people who obtain their livelihood almost entirely from the soil they cultivate, and were it not for the fear of having the results of their toil taken from them would undoubtedly cultivate a larger area and produce much more than they do at present.

As domestic animals they have carabaos and cattle, but few in number. Hogs are plentiful, and no family is too poor to possess one or more of this most useful animal. The dog and bob-tailed cat are always in evidence, as elsewhere in this island. Chickens are the only fowl raised, and every house has more or less of them. Deer and wild hogs are plentiful, and are hunted and killed in the mountains. In the rivers are caught fish, crawfish, eels, and shrimps. The Subanos do their own blacksmithing and ironwork at a crude forge in which charcoal is used as heating fuel, and where they beat out, shape, and temper tools, such as bolos, knives, hatchets, etc.

The forest products gathered by these people are gutta-percha, beeswax, cinnamon bark, and almáciga, all of which are disposed of to Moro traders for merchandise, trinkets, etc. Large quantities of resin are gathered, out of which torches for illuminating purposes are made. The use of kerosene is spreading and is greatly preferred to the resin torches, and within a short time, no doubt, will entirely replace the latter at least with those Subanos who can afford to buy it.

The women are quite as industrious in their way as the men. Every house has its loom, upon which cloth of cotton and hemp is woven, which is made into wearing apparel. The weaving is done by the women at odd times, usually at night after the household duties have been finished, and it is evidently regarded as a form of recreation and diversion after the labors of the day. They are also ingenious in making "petates," or mats, baskets, and sacks, for palay and sago, woven out of nipa leaves, which admirably answer the purposes for which they are used.

Although a subject and oppressed tribe, these people love to gather together to hold "catapusans," such as marriages, funeral rites, etc., at which they consume large quantities of what might be called their national drink, "pangasi," brewed from the fermented rice, to which is added ginger root and other unknown ingredients, making a beverage very much resembling beer in its effects, though not in taste. Men, women, and children drink to excess at these gatherings, so that, at the wind up, it develops into something very much like an orgy. Their musical instruments are organs, reed flutes, and a rudely made instrument like a guitar, with strings of twisted hemp.

Mr. Redding has been working among these people for over two years, operating coal mines, located in this section, and also doing a certain amount of trading among them in native products. They are agricultural in a certain way, gaining their livelihood from the soil. They plant corn, rice, sugar cane, gabi (a tuber), yams, bananas, and tobacco, feed a few pigs, and occasionally have a few cattle and carabaos. For planting they choose a steep hillside, cut down the few big trees and clear away the underbrush, vines, etc., which they burn when dry. With a sharp-pointed stick they make a hole in the ground, drop a grain of corn in each hole,

cover it, and seldom go near it again, except to frighten away the monkeys, until it is time to pull the corn. While the corn is still young, rice of the highland variety is planted in the same manner between the stalks of corn. The corn is pulled from time to time as the grains begin to harden, a few ears each day; but the rice is allowed to become ripe, when there is a general harvesting of the whole crop, the head of the rice being cut off near the top of the stalk with a small knife. As soon as a handful is cut it is tied in a small bundle and laid aside, when the operation is repeated. This grain is separated from the cluster by tramping it with the naked feet on a mud platform, which has been prepared for this purpose. After this the husk is broken from the grain, about two quarts at a time, being beaten in a hollow log like a huge mortar, just as is done in all parts of the archipelago. This work is all done by the women and boys, except the clearing, part of which is done by the men. These clearings, seldom very large in extent, are not often planted more than once or twice, after which they are abandoned and others are made, as they have found it easier to clear a new place in the virgin forest, where there are a few big trees at a great distance from each other (which is generally the case in this part of Mindanao), with enough shade to prevent much undergrowth, grass (cogon), etc., than to clear a place where trees and underbrush have had a new start, and the young trees are much closer together than in the old forest. Thus these people are unwittingly helping the forest for the years to come by cutting out the old big trees, which are few and far apart, and allowing a rich, thick, new growth to spring up in their place. The increase in the number of trees in a given space is several hundred per cent.

In preparing the corn for eating the ear is pulled from the stalk just before time to eat it, when the outer shuck is removed, the last layer remaining on the ear. It is placed on the coals of an open fire and roasted, and eaten from the cob. The corn compares favorably in flavor with the best sweet corn of America, although the ears are small.

Rice is boiled for the most part in small earthenware pots made by Moros, although there are iron pots (made in Germany), also bought from the Moros, who travel in their small boats many miles from home, while the Subanos, on the other hand, seldom go far from home, and then only by way of their mountain trails, or from point to point on the rivers in small dugouts, very rarely daring to go to the mouth of the river for fear of the Moros. When the rice grain is separated from the stalk it is stored away in the husk, either in a large cylinder three or four feet in diameter, made from the bark of trees lashed with rattan or vines, or in bags (batils) holding about half a bushel and woven of the same fiber from which they make thin mats. The rice is then stored away in little huts in different parts of the mountains, one here, one there, along with their dishes and such other treasures as they may possess, including big jars in which they make pangasi, or argon, etc. The rice they have hidden away in this manner they take out only at the time of a great feast or as it is needed from time to time. However, they are not very thrifty, and take little interest in storing up for a rainy day, for they can never tell when passing Moros will take, in the name of some dato, whatever can be found. Being a timid, peaceful, cowardly people, they make no show of fight, even when at times their women and children are carried away into captivity; but what they lack in fighting they more than make up in deceit, lying, and cheating, in which they have been forced to become expert in order to protect themselves from the so-called collecting of tribute by the Moros.

Subanos live on sago when the rice gives out. This is taken from the sago palm, four varieties of which abound in the swamps and river valleys of this section. The tree most used is called lumbia; they also take sago from anibong and pugahan, these last two not giving so good a flour, and causing, so they claim, a rash to break out on

the skin. These lumbia trees grow in the lowland, and look not unlike the coconut palm from a distance, although they do not grow nearly as tall, while the trunk is many times larger in diameter. To get the sago, the trees are felled with small iron axes held in the split of a stick after the manner of the American Indian's tomahawk; they are then cut into sections and split into halves. These trees have an outer growth of one or two inches of very hard wood, made up of fibers irregularly bound together, but not in concentric rings, after the manner of the palm family, and an inner pith of a creamy white appearance, soft to the touch, also irregularly traversed with longitudinal fibers at a great distance, however, one from another. These split sections are hauled to the bank of some stream where a platform is built over the water; on this platform a mat is placed on which the pith is laid after it has been gouged out. This pith is tramped by the naked feet, water being poured on it from time to time and received below in a receptacle, generally a small boat; thus the fiber stays above on the mat, while the sago flour passes through the meshes of the mat along with the trickling water. The water is then drawn from the boat and the flour is spread in the sun to dry. Sago flour is cooked in a pot over a slow fire, being stirred rapidly so it will not burn. It gradually runs together in soft masses about the size of an egg, and in taste is much like a tough candy gum drop without the sweetness. Sometimes the flour is cooked with coconut oil or hog's fat, and often the juice from the sugar cane is squeezed in during the cooking, or even afterwards.

The Subanos have no regular time of day or night for cooking or eating. Whichever one of the family chances to be hungry sets about preparing a meal; others may or may not join in the preparation, but all join in the eating at any time of the day or night.

They do little fighting and less hunting. They catch some fish with the ordinary hook bought from the Moros, and spear an occasional wild hog, which are very plentiful. A favorite way of fishing with them is to find a shallow pool that has been left after the flood of some big river has subsided, muddy this pool thoroughly, and pass from point to point, thrusting to the bottom a funnel-shaped basket with a hole at the top, into which the hand and arm are inserted to draw out the fish when he is felt to strike the side. In this way they catch many bushels of mudfish (dalat) in a day.

In the course of his census journeys Mr. Cristie heard, from Mohammedans and Subanos alike, persistent tales of human sacrifices in honor of dead timuayes. He was skeptical at first, but was finally convinced that these sacrifices actually have taken place within the past few years, outside of the district assigned to him, and, possibly, at one place within it. To facilitate further investigation, should the government ever wish to institute one, the names of two of his informants are given below, with the gist of what they said:

1. Timbuay Pogud, of the region of Gúibauan (on Sibuguey bay), said that a little more than two years ago he was present at a human sacrifice (balu-balu) celebrated at Siay in honor of the father of Timbuay Bantas. Several Subanos who were present at this interview confirmed in every respect Pogud's statement, saying that they had been present at the ceremony.

2. Dato Nunung, of Siookun, said that about eight years ago he was in the Sindangan region, acting as representative of his relative, the Dato Molana (title) of Siookun, who in turn was the descendant of a younger branch of the family of the sultans of Mindanao, which had been placed at Siookun to hold the country for the said sultans. During this stay in the Sindangan country, Timbuay Lajahgunun died,

and when the usual mourning period of a hundred days had come to an end, a human sacrifice was decided upon. Dato Nunung, as the overlord of the region, was invited to be present, and, as is customary, was given the privilege of dealing the first blow. He found, on arriving at the place designated, that all the Subanos for many miles around had gotten together, dressed in flaring gala clothes, and the faces of the former subjects of the dead timbuay were shining from the ceremonial bath which they had taken in preparation for the ceremony before them. The dato penetrated the crowd, which opened respectfully before him, and found himself under a large open shed erected for the occasion. It is my impression that the dato told me that all this took place by night, the commonest time for Subano religious ceremonies, but I am not certain on this point. Under the shed, which was surrounded by the crowd of Subanos armed with knives and spears, the dato saw the victim, a slave; contrary to expectation, the victim was not bound. He was sitting cross-legged on the ground, and two armed Subanos were sitting on his knees to make sure he would not escape. As every one but the slave was armed there could be no hope of running away, and he sat stolidly, without weeping or saying a word. The dato, as the overlord, was asked to start the ceremony by giving the first blow. The dato, according to his statement to me, had no liking for the business, but thought he had no right to break with custom, and gave the victim a very slight blow with his barong. As the first widening red line followed the stroke, all the feelings which had been repressed during the period of mourning burst forth in the beating of gongs, brandishing of spears, and frantic yells of joy. Everybody now gave the victim a blow, even the women and children taking a hand, with sticks or sharpened bamboo, or anything else that they could lay hold of. The dato does not know whether the slave shrieked or not; it was impossible to hear anything in the din. With the sacrifice of the slave, the culminating act of the period of mourning, the Subanos felt that they had passed out of the shadow, and gave themselves up to beating of gongs and drinking of rice beer, until, at the exhaustion of the liquor, they gradually passed out of the exhilaration into a lazy stupor.

BILANS.

This timid wild people inhabits the mountains south and west of Lake Bulúan, in south Mindanao, their range being southeast of that of the Tirurayes.

The scanty information we have here concerning them is furnished by Lieut. H. Rodgers, of the Philippine Scouts, supervisor, Makar census district. He writes as follows:

Little can be said about these people. They flee at the approach of Americans, or even Moros, with whom they are not acquainted. Religion is a species of devil-worship, or propitiation of evil spirits, and they are excessively superstitious in regard to signs, omens, etc. They do not live in municipalities, but each family in its own house, usually at least half a mile from any other house. They are "hill people" in the full sense of the term. So far as I am able to judge from examination of their houses, from which the inhabitants had fled at my first approach, I should say they were a superior race to the Moro—more cleanly, more industrious, and very much wealthier.

I believe, if a way could be found to overcome the natural timidity of the Bilans, they could be raised from their present state and made comparatively useful members. They would, however, need a strong military force for their protection, as the Moros will not permit their trading direct with the Chinese firms, even if they

1, 2. COLLECTION OF DEAN C. WORCESTER.

1. TEACHER OF MUSIC AND DANCE OF THE BAGOBOS. 2. BAGOBO WARRIORS, SHOWING ELABORATE COSTUMES. 3. BAGOBO MUSICIANS OF DAVAO.

were so disposed. This trading process is at present a strong source of revenue to the Moro datos, who would resent any attempt to open the highway to the Bilans. I have attempted to open this trade in a feeble manner, but am convinced that it can not be done without a strong military force.

BAGOBOS AND MANDAYAS.

These people are found in the province of Dávao, and were enumerated under the supervision of Maj. M. W. Day, of the Ninth U. S. Cavalry, who had been among them for two years or more. In his report of the operations of the census he refers to them as follows:

The natives of the province of Dávao may be divided into two general classes: First, the Visayans, who are Christians, wearing the ordinary native clothing, and nonmigratory. Second, the non-Christian tribes, like the Moros, Bagobos, and Mandayas, who are migratory, although they do not leave the province and wear picturesque clothing adorned with beads and bells, or with embroidery. Many of these have been baptized by the friars and are known as "Nuevos Cristianos," but they have little idea of the Christian religion. The Moros have a crude form of the Mohammedan faith, while the Bagobos are said to be fire worshippers. All of the second class have the blood feud, and watch for years for an opportunity to bolo or spear an enemy or a member of his family. It is considered that if a man pays the death price (which will average one horse and two or three colintos, as the gongs are called) he can not be punished for murder. The Ocacola Bagobos have ceased their annual human sacrifice, which they would eat, but the Mandayas continue theirs. The Mandayas are, however, not cannibals, but only cut off the hands, feet, or ears of the man they kill—to show in their barrio as a proof of the killing. All of them have slaves, obtained by capture or purchase. Frequently parents sell their children, and assist the owner to recapture one who escapes. Slavery has been forbidden, but it will be necessary to furnish asylums or houses for the children and old people to make it effective.

Excepting the Moros the people are generally clean in person and habitation, a small number having their houses in trees out of reach of spears.

Most of the people use intoxicating liquor, but are temperate, and rarely show its effects. They drink tuba just as it comes from the tree, before it has fermented much.

The betel nut (bunga) with the buyo leaf and tobacco is used by all non-Christian tribes, and by many Visayans; even children four or five years old, both boys and girls, chew constantly. It does not seem to have any deleterious effect.

MOROS.

The Moros are the most numerous of the peoples of the Philippines commonly regarded as wild, and embrace all who accept the Mohammedan religion, even though they differ in language, customs, and degree of civilization. They are classified primarily as Moros, Sámals, and Bajaus. The former may be still further classified as Ilano, Joló, Kalibugan, Maguindanao, Malanao, and Yakan Moros.

Owing to the fact that these subdivisions of the Moro people have not been in all cases distinguished from each other by the enumerators, it has been found impracticable to separate them in the tables giving

the number and classification of the wild tribes, in which they are all necessarily grouped simply as Moros.

The following descriptions of the present condition of the Moros are compiled from information furnished by Capt. James Baylies, of the Tenth U. S. Infantry; Maj. L. W. V. Kennon, Tenth U. S. Infantry; Capt. John J. Pershing, Fifteenth U. S. Cavalry; Capt. J. E. Mahoney, U. S. Marine Corps; Capt. H. R. Hickok, Fifteenth U. S. Cavalry; and Capt. K. W. Walker, Fifteenth U. S. Cavalry, supervisors of the census, respectively, for the military districts of Cottabato, Iligan, Lake Lanao, Basilan, Siassi, and Tawi Tawi, and Mr. Emerson Christie, special agent of the census for Zamboanga district:

The Malanao Moros inhabit the country surrounding lakes Lanao and Dapao, and as far south as an east-and-west line through Mataling falls and the Ganassi trail from Malabang to the lakes, the vicinity of the Agus river as far north as Iligan, and westward along the coast of Misamis to Panguil bay. Their total number is estimated to be 95,893, as enumerated in the two census districts of Iligan and Lake Lanao.

The Maguindanao Moros are found principally in the district of Cottabato. From the valley of the Río Grande de Mindanao they have spread eastward across the divide to the Gulf of Dávao, and westward along the coast as far as Dumanquilas bay, in the district of Zamboanga. Their number reaches a total of about 50,000, of which 35,690 are in the district of Cottabato.

The Ilano Moros live along the seacoast west of Malabang into Zamboanga district. Their number is small.

The Kalibuganes are a mixed tribe of Moros and Subanos and inhabit the interior of Zamboanga.

The Joló Moros are found mainly in the Joló group, where this tribe forms the dominant element. They are found, also, in considerable numbers in the Siassi group, where they form a majority of the population. Several hundreds have migrated to Zamboanga, where, although few in number, by their strong personality and aggressiveness, they have exercised a marked influence.

The Yakan Moros are found mainly on the island of Basilan and perhaps, to a small extent, on some other islands of the Basilan group. A few hundred of them have wandered across the straits to Zamboanga. On the island of Basilan this people keep to the interior, the settlements on the coast consisting of Sámals. It is impossible to state the number of the Yakans, since the population of Basilan was not separated by the enumerators into the two tribes.

Of all Moro tribes the Sámal is the latest by migration, having come from Johore at a comparatively recent date. In some localities, as in Zamboanga district, it is the dominant people, being superior to other Moro tribes in force and intelligence. The Sámals were formerly the Malay pirates referred to in recent history. They swept the sea and coasts from Borneo to Luzón, and from Siam to Mindanao, capturing loot and slaves. The Spaniards organized three expeditions aimed at their destruction in 1848, 1858, and 1864, respectively, and finally conquered them.

Under various names the Sámals are found throughout the Sulu archipelago, in Zamboanga, and on Sámal Island at the head of the Gulf of Dávao. The Tawi Tawi group is peopled mainly by them. They form a large element in the Siassi or Tapul group, and are found in indeterminate numbers in the Joló and Basilan groups. As a rule, wherever they are, they occupy the seacoast, and rarely live in the interior.

Moros differ somewhat from one another in habits and customs, modes of life, and

1. MORO SHOWING ONE WAY OF WEARING THE SARONG. 2. SANGUIL MORO WARRIOR IN BRASS HELMET AND CUIRASS. 3. SÁMAL MOROS, CHARACTERISTIC DRESS. 4. SÁMAL MORO OF ZAMBOANGA. 5. MALANAO MORO. 6. YAKAN MORO.

beliefs. In general, the differences among them appear to be due to differences in their stages of civilization. Certain of these people are sedentary, living in villages, on or near the coast, where, in connection with their universal industry of fishing, they carry on a little farming, and even crude manufacture. Such are the people of Zamboanga, sometimes called the Sámal Laut, who are the dominant people of the peninsula. From these, forming the highest type of the Sámal people, are gradations until we reach the Bajaus of Zamboanga and the Sulu archipelago.

Along the coast of Zamboanga and throughout the entire Sulu archipelago are scattered a people called the Bajaus, or sea gypsies. They wander from place to place, often living for months in their rude, outrigged boats. Their occupation is fishing and they exchange the products of the sea for rice and cloth. They are a hard working, peaceable people, frequently owning considerable property. They are considered of lower civilization than the Sámals, by whom they are more or less oppressed, being required to fish for the land chiefs who often rob them under pretense of fines. They are said to have a different religion, and the Mohammedans refer to them as Kapils, but what their religion is, or whether they have any, has not been determined. Like Mohammedans, they will not eat pork, but, unlike them, they have but one wife.

If of pure blood, which is usually the case, the Moros have the physical characteristics of the Malay race. The complexion is olive brown, the hair straight and black. They are somewhat taller than the average Filipino, straight and well formed, and often strong and stockily built, with well-developed calves. The feet are particularly broad at the toes, which are generally widely separated, due to the habit of going barefooted, and also to the usage to which they are put. In many of their daily occupations, they use their toes as other people would the fingers, thus, in climbing a tree their toes will grasp the climbing rope, or in sailing a boat they will wind the sheet around the great toe, which will hold it steady.

The dress of the Mohammedan tribes is simple, both for men and women. For the former, it often consists of nothing except a sarong, which is a long piece of cloth joined at the ends and folded around the waist. A breech clout is sometimes worn, and upon special occasions a costume consisting of a tight jacket and close-fitting trousers, buttoned to the ankle and full in the seat. These garments are often made in brilliant colors and ornamented with bright buttons. In the folds of the sarong is usually carried a short dagger, or if a man is of high rank, the kris. Woman's ordinary clothing is universally limited to the sarong, a strip of cotton cloth about four feet wide and ten feet long, while her more elaborate dress is usually a close-fitting jacket and loose trousers. Shoes or sandals are unknown to the common people of either sex, and the favorite headdress is a bright-colored scarf, which the men twist into a turban. Occasionally straw hats of domestic manufacture and enormous size are worn by men, but the turban is more popular. Children wear little or no clothing in their homes, frequently a sarong in public. It is not unusual to see the Moro women ornamented with rings and bracelets, the work of native smiths who are skillful in molding brass and precious metals. The hair is worn long by the men, while the women knot it upon the head in more or less fantastic fashion.

The Moros bathe frequently, spending a great deal of time in the water, but despite this fact they can not be said to be cleanly. Their houses and surroundings are often in a filthy condition. The people fall far short of the standard of Mohammed, with whom cleanliness was said to be the foundation of religion.

A personal habit which attracts attention is the filing and blackening of the teeth. The teeth are filed at the gums and very seldom at the edges, apparently to give them an outward curve. This process, which is painful, is begun by both men and women in their youth and continued for several years. Front teeth are filled with copper, not for the purpose of preventing decay, but for ornament. Artificial teeth

of horn are sometimes inserted, but they are entirely useless. The dye for the teeth is differently compounded, often from lemon juice, rusty iron, and a certain vegetable sap.

By instinct the Moro is warlike and exhibits cruelty toward his enemies, as is usually customary with savages. Ready and eager to shed blood, independent and jealous in nature, he makes war on slight provocation. He is not open and fair in fight, and frequently resorts to cowardly means of attack. Every man when outside of his house or away from home is armed either with a kris or barong, the two weapons of warfare. They sometimes carry spears, and occasionally a species of war club shaped like a boomerang. The barong is a cutting weapon, with a blade 12, 15, or 18 inches long, with front and back oval shaped, meeting at an acute angle at the point. Krises are of two varieties, wavy and straight, and are used for both cutting and thrusting. They are often prized for their service in having killed a great number of persons, and their selling price established accordingly. Rifles are highly prized but hard to obtain.

Due to the nature of their weapons, the tactics of combat among Moros are to close at arms' length. As an individual, therefore, the Moro is dangerous, but collectively in open fight organized troops have little to fear from them.

The principal articles of food are rice, for which corn is sometimes substituted, fish, chickens, vegetables, wild fruits, and coconut oil. The natives are fond of chickens and eggs, and most families raise poultry for the table. Pork is forbidden by the Mohammedan religion, and the use of venison, or the flesh of the carabao, ox, sheep, or goat, is limited, the Moros being apparently not fond of meat. As with all Malays, fish is an important staple and a favorite dish. This is preserved by the simple process of splitting it open, without cleaning it, and laying it in the sun; it partially dries and partially decays, and as a result has an unpleasant odor. It will keep a long time and is relished by the natives. These fish are frequently caught and preserved by large fishing parties who assemble at some lake for the purpose, usually remaining two or three days and making a picnic of the occasion.

Among the vegetables, the camote, or sweet potato, is perhaps the most generally used, although pumpkins, similar to American varieties, are grown to a considerable extent, and gabi, a large plant resembling rhubarb, is a well-known article of food. The banana is much appreciated, even those varieties which are woody, full of black seeds, and without flavor. The people are fond of sugar, which is manufactured in small quantities in primitive fashion from the sugar cane. A number of wild fruits are eaten, mangoes being the most acceptable, but none are cultivated. The coconut is used sparingly as a relish, but very extensive use is made of the oil. This is expressed from the nut in crude fashion and boiled down to the consistency required. The use of lard being forbidden by religion, and butter being unobtainable, the oil of the coconut supplies a real want, adding a needed oleaginous component to the simple dietary. The diet of the sea gypsies consists almost entirely of fish and tapioca. The food is prepared by the women in an exceedingly simple kitchen, which consists of little more than a diminutive fire over which one or two pots are placed. Cooking is frequently done beneath the house, or upon a small mound of earth on the floor of the living room. Fire, needed only for the preparation of food, is generally made by the use of matches, although the flint and steel are known to all Moros, and even the more primitive method of obtaining fire by sawing one piece of bamboo across another, is still in use. The people eat with their fingers—tableware, knives, and forks being unknown.

Like all Mohammedans they are a very temperate people in the use of alcoholic liquors. The sale of intoxicants is prohibited in military districts.

Tobacco is grown in small quantities, sufficient to provide for the family wants, while the surplus is frequently traded off in the little neighboring markets which

1. MORO HOUSES ON RÍO GRANDE, COTTABATO, MINDANAO. 2. MORO SPLIT-BAMBOO HOUSE OF COMMON PEOPLE AND SLAVES. 3. MIXED NATIVE ARCHITECTURE OF CIVILIZED TRIBES. STONE AND MORTAR SUBSTRUCTURE AND WOODEN FRAMEWORK. 4. EXAMPLE OF FINE NIPA STRUCTURE.

abound in all localities. Practically none of this tobacco is used in smoking, but it is almost universally chewed in conjunction with the betel nut.

The habit of chewing betel nuts has a firm hold on all the people—men, women, and sometimes children—and is not supposed to be injurious. On the contrary, its effect is said to be the production of abundant saliva, which aids digestion, preserves the teeth, and relieves bodily fatigue. A betel-nut outfit consists of a small brass box, a knife, a mixing pestle, a small package of shell lime, a few betel nuts from the areca palm, and a roll of buyo leaves. The visible supply for the gratification of this habit would appear to be entirely inadequate; the areca palm is not frequently seen, while the pepper plant, from which the buyo is obtained, seems to be even more scarce, no attempt appearing to be made to cultivate either; still both nuts and leaves, as well as the lime, seem to be plentiful enough to supply the undoubtedly extensive demand.

The use of opium among the Yakan Moros is said to be increasing. Gambling is a vice which holds great attraction for many of the natives, although the Koran warns all followers to abstain from its practice.

Polygamy is universal among them and is sanctioned by their religion, a man having as many wives as he can support. The Koran permits four legal wives, but frequently all except one are slaves, whose children do not inherit rank and titles. Wives are practically bought, the suitor paying an amount agreed upon to the family of the bride. Marriage ceremonies are performed by the priests and are often quite elaborate, followed by feasting, music, and dancing. The Moros have many children and the family relations are closely drawn. The women carry the children on their hips as is customary among Filipinos. The proportion of illegitimate births is small. The marriageable age for women is 13 years. Among Malanao Moros divorce is easy. Husband and wife separate on mutual agreement, the woman returning to her people, taking with her all presents received from her husband during wedded life. If a man finds himself too poor to support all his wives, he may send one or more back to their former homes. The position of the women among Moros is rather high, in that they receive kindly treatment and often affection from their husbands, and are consulted in matters pertaining to the family. Both parents appear to be fond of their children.

The Moros of all stations build their houses alike, in common with other Malays. They are raised on poles, from three to ten feet above ground, and are often built near or over the water. The timbers are lashed together and held in place with bejuco or rattan. The roofs are thatched with nipa or other variety of palm, and the walls made of salaga, a species of palm leaf sewed together. A few rough boards or strips of bamboo are used for the floor. These structures are not substantial but they are practically waterproof, afford shelter from the sun, and also withstand the frequent earthquake shocks. The Bajaus, or sea gypsies, live in boats, their occupation being fishing. Those who do not spend all their time at sea build huts on the shore over the water. Sámal settlements are compactly built along the coast, while those of the Yakans are scattered, the people living in small rancherías with houses far removed from one another. Generally, the Moros proper live farther inland than do the Sámal Laut.

The house furnishings are not elaborate, but sufficient for the needs of the occupants. Chairs and tables are not required, as the natives sit on the floor. A few shelves, perhaps, are used for pottery and kitchen utensils, all of which are primitive, consisting of brass bowls and jars, dried gourds, coconut shells, banana leaves, and crude baskets. Mats are used for sleeping, except in the homes of datos, where possibly bedsteads, curtained with mosquito netting and provided with pillows and mattresses, may be found. Among the wealthier people the walls are decorated with krises and lances, while tom-toms and other musical instruments are among the family possessions. In addition to this property each family usually owns a boat

or canoe. Artificial light, when needed, is obtained from a slender torch-like bundle of resin, wrapped in a green leaf, or from a dish of coconut oil in which floats a wick.

The people are in a generally prosperous condition, but living as they do in a land of surprising fertility, where the climate offers but little encouragement to either energy or ambition, there is no great effort to better the conditions into which they are born. Everybody is calm and happy, and from the standpoint of Americans they may perhaps be termed lazy, but it must be remembered that industry would profit a man very little under the circumstances of life that beset these people, yet upon many occasions individual Moros have been known to do very hard work. As a rule they are not thrifty, freely squandering their substance, but here again they are the victims of environment, which holds out but little inducement to save. The Lanao Moros are reported to be in a generally prosperous condition, having possessions which give evidence of thrift and industry. The Joló Moros show considerable pride in special achievements. The men attend to all the outside work, plow the fields, go on various expeditions, and engage in fishing. Those individuals who are particularly skilled in the small things incident to their daily life acquire a local reputation. One man is distinguished for sailing the fastest boat, another for making the best barong and kris handles and scabbards, a third as an expert catcher of crabs and crayfish, another as a diver, and so on through all the native occupations.

Among the Sámal Laut and Bajaus there is little employment for labor. The man of standing has slaves or dependents to do his work, and few give employment to other Moros. When labor is required by the military it is hard to get and only obtainable from the escaped slave who is under military protection. There are many Moros who are slaves or dependents and own no property.

Almost all Moro industry is home industry, and the aggregate is not large. The tools, by the aid of which everything else is produced, are largely homemade. Here, however, as elsewhere in the Moro economy, much ingenuity is often wasted in trying to fit one tool to many uses instead of producing suitable implements for the work at hand. Even with the Moros there has been some little specialization of function; thus not all men are smiths or woodworkers. There has also been some recognition of the necessity for trades and crafts men in even the small division of labor which their social organization affords, but this tendency is not marked. The Moros are primarily farmers, and in addition some of them have taken up other work, but however skillful they may become at the secondary occupation, they appear to obtain their livelihood from the soil, never becoming so secure in their trade as to depend entirely upon it. The ironworkers or smiths are the most skillful among these semi-tradesmen. Their equipment is primitive, but shows considerable ingenuity, and their workmanship excellent. They obtain iron and steel from Chinamen by barter, and from these forge the numerous krises, bolos, knives, daggers, and spears, in which the people take great delight. The occupation of smith is held in high honor among them.

Another important home industry is the building of boats. The Moros are semi-amphibious, and when they are not actually immersed in water are frequently to be found upon its surface in small canoes. Practically every family possesses at least one boat and often several, but although the demand is consequently large, it has not developed a special class of boat builders, every man being competent to construct some kind of craft for his personal use. It requires about three weeks' time for a man to make an ordinary canoe twenty feet in length, but the tools employed are crude and unsatisfactory.

The making of pottery is not generally distributed, nor is it woman's work, as is often the case among uncivilized peoples. A potter's wheel of a rude pattern is used, while the material is a black volcanic mud obtained from the sediment of streams. It is not apparently rich in clay, but holds together quite well after baking. The

pottery is fired by being put directly into an ordinary fire where a good deal of it is ruined, but from which the rest emerges hardened and toughened sufficiently for household use. The firing kiln is unknown to these people.

Some of the more ingenious artisans work in brass, hammering or molding a variety of ornamental articles. The ability to do this work is now rarely found, and few articles are made except betel boxes, ornaments, and handles of krises. Some of these brassworkers are able to work in silver, but their skill does not equal that of the Navajo and other American Indians.

The women weave cloth of good quality, the usual articles made being the sarong and large handkerchief, which constitute the ordinary dress of both sexes. This work is executed upon efficient although primitive looms, and is often artistic in addition to being skillfully woven. But little use is made of twills, diagonals, and other fancy weaves, considerable diversity in appearance being obtained by the manipulation of many colored threads. The thread is obtained from the Chinese, the women having little knowledge of spinning. The dyeing is done at home with colors that are generally lasting, extracted from barks, roots, and flowers.

The women also manufacture baskets and mats which do not, however, differ materially from similar articles made all over the world.

With the Bajaus, or sea gypsies, fishing is practically the only occupation, the men being engaged in obtaining fish, mother-of-pearl, sea cucumbers, and other sea products which are exchanged with landsmen for articles of necessity. Among some other of the Moro tribes fishing is merely incidental, not pursued as a trade or exclusive occupation, but only as occasion demands. Fish are numerous in nearly all rivers and lakes and but little tackle is necessary for their capture. Moros consume a large amount of fish, but usually catch only enough for their own wants, occasionally trading any surplus for other articles of food. They are all supplied with boats and are skillful in their management, so that fishing is little more than a recreation.

With the exception of the sea-roving tribe the Moros are farmers, in the sense that they obtain subsistence from the soil, although they do not cultivate the land extensively. Rice is grown on both lowland and upland, and where free from locusts is fairly productive. No modern methods are applied in farming, plows being practically unknown. The ground is broken up and prepared for the crop by a heavy, pointed stick, sometimes aided by the ever-useful bolo. No further cultivation is given except weeding and that which can be done by hand. This primitive method of planting satisfies the natives, who might easily employ farm machinery, since the carabaos make excellent draft animals.

A small-eared, low-growing corn is quite extensively raised, principally because it is not attacked by locusts. It receives little care other than numerous weedings, and the quality of the seed is so poor that the resulting crop is far from satisfactory. Very little improvement, either in the quantity or quality of this food, can be expected until the Moros are taught the necessity of crop rotation, and the use of a seed corn which has not become worthless through centuries of inbreeding. Sweet potatoes are a never-failing crop, growing apparently from year to year without replanting, but they, too, could be improved by the introduction of fresh stock, and the employment of modern agricultural methods. The banana is prolific, but can scarcely be classified as a cultivated product, for, although great groves are to be seen everywhere, they receive no attention. Coconut trees abound near the coast, and the natives find them of use in many ways, the oil being an important article of food. Tobacco is raised for family consumption, also a small quantity of sugar cane, from which sugar is manufactured in crude fashion. Sugar cane slips are set out in May, and the cane is ready to cut the following January. To make sugar the cane is usually cut into small pieces, which are crushed by hand and boiled. There are a few sugar rollers of the most primitive pattern. Pumpkins, camôting cahoy, gabi,

papaya, and farm products peculiar to the Philippines are raised. There are few cultivated fruits.

The Moros in the vicinity of Lake Lanao raise fine coffee, and all who live on the island of Mindanao collect large quantities of gutta-percha, rubber, and abaca.

The market is an important institution among these people. Many localities have their regular market days, when natives from different settlements gather to exchange products. The custom is ancient and exists throughout practically all Moro territory.

The domestic animals, consisting of carabaos, dogs, chickens, and sometimes ponies, goats, and sheep, are kept underneath the house. The number of carabaos owned is an indication of a man's wealth, the possessor of more than ten being acknowledged a rich man. They sell for about forty pesos each, but are not usually in the market. Owing to the prevalence of rinderpest for two or more years, cattle are scarce. No attempt appears to be made to use any domestic animals in agriculture.

The social organization of the Moros may differ slightly in detail among the various tribes, but in the main is the same and peculiar to the Moros as a whole. A classification of the people shows leaders, freemen, and slaves. The government is patriarchal, the most prominent member of the order being the chief, generally called a dato, although sometimes known as sultan, rajah, or by other title. But whatever his name, his authority is always recognized by members of his clan, and he has extensive power over his followers. The office is usually hereditary, descending generally to the oldest or most capable son. The number of subjects varies greatly, running from half a dozen to perhaps ten thousand, but the importance of a chief is not entirely commensurate with the size of his following, other considerations, such as noble blood or great riches, frequently being taken into account in determining the dato's rank and influence among his peers. There seems to be some tendency toward acknowledging the social importance of the merely rich man, which, if increased, will necessitate considerable changes in the social status. At present this idea has not sufficiently developed to threaten the position of the dato, who rules by right of blood and exercises supreme authority.

All datos, and especially those of importance, strive to keep in immediate attendance upon their persons a number of armed fighting men, who not only act as a bodyguard, but also have functions of a governmental nature. The personal power of the dato is in no way lessened by the existence of this class of retainers, for they derive their authority from him, and are responsible to him alone for the way in which it is exercised. The personal despotism of the dato is largely tempered in practice by the great deference paid by all members of the community, himself included, to custom. There seems to be no code of law governing this people, but they conform to what they term Moro customs, the reputed usages of their ancestors, in the observance of which they are quite strict, and of which they are very tenacious. Precedent is the great lawgiver and court of last resort. Nor would it occur to even a dato to institute new laws in the governing of his people, and progress that would have to be based upon such action would meet with general disapproval. The Moros have no comprehension of the word government, recognizing only a central power. In the taking of the census they frequently asked by whom it had been ordered, and when told by the government were at a loss to understand what the word meant. If told, however, that the governor had decreed it, they were satisfied.

All real authority is vested in the dato, who presumably acts in the interest of his subjects. By him war is declared and carried on and peace made. As he is not always competent to lead in war, it frequently becomes necessary to select a war chief. His functions are becoming comparatively unimportant under the peaceful conditions of the last few years, but even now the most important dato of Cottabato relies greatly upon his minister of war, and still considers himself so much in need of soldiers that he is attempting to put into operation a system which does not differ

greatly from a general conscription. The administration of justice is a guarded prerogative of the dato, who holds court in person, presiding, if not in all cases, at least over those which reach him by appeal from lower courts. If the case presents unusual difficulties, he may confer with his panditas, who are presumably learned in the only written law—the Koran—and who are the elders among his personal following. The title to all land occupied by the tribe is vested in the dato, but although the occupancy of it by the commoners is either with his permission or by his sufferance, the tenant nevertheless enjoys all the advantages of ownership, including, in a majority of cases, permanency of holding.

Among the Malanao Moros, sultans and datos are often elected. In matters of importance a sultan usually acts by and with the advice and consent of his subordinate officials. The term sultan seems to be flexible, but is commonly applied to a leader having several datos under his authority. He may, however, have none, and a dato at times may have more wealth and influence than his sultan. A dato does not necessarily obey the sultan, although he is liable to punishment if the chief ruler is powerful enough to wage war against him.

Chiefs of high rank are never chosen among the Bajau tribe, though they have a headman to every community of boats called the Capitán Bajau.

Naturally, from the character of social organization existing in the Moro country, there can be, and there is, but little uniformity in the definition of crimes, the manner of administering justice, or the character of the punishments inflicted. What exists in one place and at one time may differ widely from that of other localities at different times, the method of punishments inflicted depending greatly upon the dato who assumes jurisdiction. Generally speaking, crimes are punished by fines, or slavery in case they are not paid.

Among the Sámal Laut of Zamboanga, a dispute arising between two persons of the same village is taken up by the local headman in conference with all interested, and a decision arrived at among them. If the accused and leader do not agree, the case is carried to the next in rank, such as a secondary dato, and again discussed. If the results are still unsatisfactory it goes by appeal to the ranking dato of the region, whose decision is final. In case of murder or other grave offense, the military government expects to exercise authority.

If the difficulty involves people of different villages, the respective headmen take it under consideration, and the case is subject to appeal in a similar manner as stated above. The supreme authority, or overlord, has power to quash any previous decision. Minor matters are usually settled without appeal. The following customs are recognized among the Sámal Laut:

Adultery in woman must be proven by at least two witnesses, and the punishment inflicted is a heavy fine to be paid by herself or her family to her husband, which amount he shares with the datos or headmen who conducted the trial. If unable to pay the woman becomes a slave and her husband is at liberty to sell her. A woman can not secure divorce on the ground of her husband's adultery. A man convicted of adultery is subject to a fine twice as heavy as that exacted from a woman. This money goes to the injured husband, who divides with the headmen. If unpaid the offender becomes a slave and is sold. Persons caught committing adultery may be killed justifiably by the wronged husband. For the crime of fornication the man is punished twice as heavily as the girl, the former paying a fine of 100 pesos to the girl's father and the girl 50 pesos to the judges. Failure to pay after a reasonable time is followed by enslavement. Incest and carnal assault upon a young girl are punished with death.

A convicted thief must pay the victim twice the amount of the theft, in addition to a fine, which goes to the headmen. If the case comes before a dato he receives the entire fine, but is expected to divide with the headmen assisting in its conduct.

Failure to pay means enslavement of the condemned, who, however, often substitutes one of his children, who, in this manner, sinks into slavery for life.

Murder is usually punished by a heavy fine divided between the family of the victim and the men who try the case, a dato receiving an extra share.

If a man commits a crime when intoxicated, the case is investigated to see whether he was in that condition voluntarily or whether others were partly to blame, and this fact is taken into consideration in the infliction of punishment.

As may be seen from the above statements, the customary law of these people allows money as settlement for almost all crimes. In fact, this has always been the usual practice among the Malays of the Philippine Islands. With the Sámal Laut particularly this method is the natural one, in view of the fact that not only the somewhat unsettled and roving life of the tribe is unfavorable to devising means for guarding prisoners, but especially because the fining system is a source of income to the headmen.

The Maguindanao Moros have but few criminals and generally deal summarily with them, the penalty in a majority of cases being fines. In extremely rare cases the offenders are sentenced to confinement, and in the absence of jails or other strong buildings are secured by attaching a huge block of wood to the ankle.

Among the Sulu tribes the sultan appoints a judge before whom all cases are tried. A person committing robbery or theft is sentenced to a forfeiture of $105 Mexican. The fine for murder is $210 Mexican for each person killed. In default of payment for any crime the culprit is sentenced to slavery. According to the rules of evidence the accused can not testify in his own behalf. He may be convicted upon the testimony of a single witness, which fact, together with the custom of giving half the fine to the complaining witness, often makes the prisoner the victim of revenge.

The Malanao Moros punish adultery in a woman with death. The other punishable crimes are murder and robbery, and the only punishment for either is death, usually by beheading.

A feature of the Moros' social organization alien to civilized ideas is the system of slavery which prevails very generally. It differs materially from the institution of negro slavery as it formerly existed in the United States, and in many cases the bondage is almost nominal. Sometimes the slave is from an alien tribe, or a captured man of the woods, but oftener of pure Moro blood. Master and slaves usually live in the same house, eat the same food, and exist upon the same plane. Their simple wants are provided for them, and undoubtedly many bond servants prefer the secure and easy life they lead in the household of a strong master, who always has enough fish and rice, to the struggle for existence that would follow their liberation. The female slave often occupies a position of considerable importance.

Different degrees of slavery are recognized. The slaves are obtained as captives in war, as punishment for crime, as a security for money loaned or other debts, or by the despotic decree of some chief. They may be bought and sold. A man desiring to borrow money turns over as security some relative or other dependent, who is bound to servitude until the debt shall have been paid. Persons failing to pay their debts are liable to bondage, and because of high rates of interest and cost of maintenance may remain in servitude the rest of their lives. Often, however, the slavery is temporary, pending the settlement of debt.

The Sámal Laut, in days of piracy, obtained an abundance of slaves as the result of their expeditions. Among them were Filipino Christians, pagans, and Mohammedans. They did not liberate people of their own faith nor those willing to embrace it, which the orthodox Mohammedans recognize as a law of the Koran.

Among the Bajaus slavery is general, and each man is required to work one or two days of each week for his chief.

No attempt has been made to show the actual number of slaves held, on account of the extreme difficulty of obtaining reliable information upon the subject.

There are no public institutions to maintain, and taxation is not heavy among the Moros. Theoretically none of the taxes go to the dato, being tithes of the church, but indirectly a considerable sum finds its way into his treasury. It is good policy for his subjects to offer him small presents of poultry and farm produce with regularity, and the delinquents are liable to a visit from his armed retainers. The administration of justice is made self-supporting by fines, which are the usual form of punishment, the dato receiving a generous share for conducting trials. Many other sources of revenue contribute to his wealth, including marriage fees, market dues, etc.; indeed nearly all the ordinary transactions of the community pay tribute to the ruler.

There are neither bridges nor public highways. A few trails extend from the shore to small clearings in the forest where lumber is cut. The principal means of communication is the vinta, a small boat in which produce is carried from the rancherías to market.

With a very few exceptions the Moros are unprovided with schools. A small percentage of the inhabitants is able to read and write, the teachers being Mohammedan priests. The Arabic alphabet is used in writing the language, which is a dialect of the Malay tongue. The only book written in Arabic is the Koran. Parents show little interest in the education of their children. Among the Sámal Laut boys are trained for the priesthood by making their home with priests, where they remain for several years in the capacity of servant and pupil. Occasionally, when grown, they are sent to Singapore for continuous study, but such cases are rare. If a man goes to Mekka he is given the honorable title of pilgrim and is held in high consideration.

Moros are fond of music, but their ear is poorly trained. They play upon several instruments, but according to recognized standards there is neither rhythm nor melody in the dingdong, monotonous sounds. The chief instrument roughly resembles a xylophone, upon which women often become expert players, being able to continue several hours without intermission. The music is sometimes accompanied by the voice, the burden of song being love, war, blessings of peace and prosperity, the words being spoken or sung as thought or chance suggests. They also have a drum about a foot and a half long and eight inches in diameter; it is made from a section of a tree hollowed out, and the ends covered with rawhide. This is struck with the hands, sometimes on one end, again on both, producing a shuffling, subdued noise. A few violins are made by the Moros in imitation of the usual model, and some men attain certain skill in their use.

Chinese gongs are occasionally used to produce music. The larger ones, perhaps a foot in diameter, have a small hole in the side through which a string is passed and looped over a nail or peg. Thus suspended the gong is struck with a bass drumstick, which produces a deep and resonant vibration. Smaller gongs, from four to eight inches in diameter, are arranged in a series according to scale, supported over a table by two parallel strings. They are struck with hammers, one in each hand, in a manner similar to the playing of the xylophone. These different musical instruments are played little during the day, but furnish evening entertainment until a late hour.

The Moros are superstitious and unprogressive, and although everywhere the Koran is regarded with great reverence, they are as a rule densely ignorant of its teachings, and are not steadfast in the practices of Mohammedan faith. Aside from a few religious rites and abstention from the use of pork they can scarcely be said to abide by the laws of Mohammedanism. They have priests, called panditas, and pay them a nominal respect, but are not particularly prompt in paying the

tithes expected of them. With the exception of the priests none observes the five daily hours of prayer. There are but few houses of worship, and these are modest mosques or chapels (in reality nipa shacks), where services are held on Friday, the Sabbath of the Mohammedan. The priests read selections from the Koran in Arabic or Malay, which are not understood by the average listener. In many villages there are no places of worship. The religion, however, permits of home worship, and doubtless many Moros are devout and loyal to their faith. In cases of sickness a priest is often called in to repeat religious formulas over a glass of water, which is then drunk by the patient. Aside from the exhortations to make war against the enemies of the faith, and from the latitude allowed in the number of wives, the Koran represents justice, stability, temperance, and civilization. The Moro religion is largely a governmental affair in many of its aspects, a kind of state church, and acts committed in its name are respected. The Spanish converted to Christianity a few Moros, who are scattered along the coast in the vicinity of Zamboanga.

All the tribes have numerous superstitions. Among them it is customary to fly white flags from their houses at the time of an epidemic, to keep off evil spirits. They also sometimes outfit a boat with clothing, food, water, and money, and turn it adrift, the idea being that when the evil spirit who sends the plague meets this boat he will be appeased by its contents and will not visit the settlement.

Although the Moros appear to be strong and healthy, few extremely old persons have been observed around the rancherías, and the average life is probably shorter than that of Europeans or other civilized peoples. Infant mortality is believed to be heavy, doubtless due to ignorance of hygienic laws. The most fatal disease is cholera, which swept over the land during November, December, and January, 1902-3, carrying off a large percentage of the inhabitants. In a canvass of 300 houses in Cottabato, the death rate among the occupants from cholera was found to be nearly 19 per cent. These houses were scattered over a considerable area, and as the conditions which affected them were more or less general throughout the district, it is probable that in Cottabato cholera reduced the population nearly one-fifth. Owing to the plague of locusts many of the Moros were short of nutritious food, and in their poorly nourished condition were unable to withstand the violent attacks of the disease. Once started, little could be done to check its progress. There was not sufficient medicine, and it would probably have done little good, as the Moros persistently refused to take it under any circumstances. The Malanao Moros are fatalists, declining to boil water to prevent cholera infection, on the ground that if God wishes them to die they will be unable to prevent it, and if he does not, they will live.

In Tawi Tawi chiefs were instructed by the surgeon of the army post regarding the protection of the water supply, and as these regulations were fairly well complied with, the progress of cholera was somewhat checked. In the Lake Lanao district it is estimated that 1,500 were carried off by the epidemic, despite the fact that the Moros were instructed how to prevent the spread of the disease.

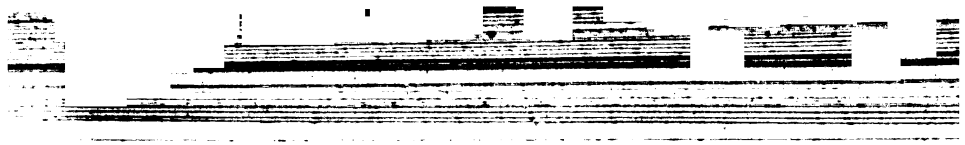
The people are subject to fevers and other diseases, due largely to a lack of sanitary and quarantine regulations. There are cases of consumption and leprosy, but these are comparatively few and the diseases do not appear to be spreading.

The Sámal Laut, with a diet limited to fish and tapioca, are subject to skin diseases, due to imperfect nutrition, as well as a lack of cleanliness. In some villages the proportion affected with such diseases is one to every four or five persons. The general appearance of such persons is repulsive, their bodies being badly disfigured. Scrofula and cancer have also been observed.

The land Moro women spend much of their time indoors, and are consequently more or less anemic, their lives averaging less than those of the men. They marry young, give birth to large families, and age rapidly.

1, 4. COLLECTION OF DEAN C. WORCESTER.

I. GADDÁN TREE HOUSE. 2. A DWELLING OF THE MAMANŬAS. 3. TINGUIAN HOUSE AT PADANGITA—A FEAST IN PROGRESS.



Respect for the dead is general among the Moros, who provide a suitable burial, attended by more or less religious ceremony. The death of a dato or other important person is celebrated with considerable pomp by the Malanao tribe. The body is kneaded, to remove all impurities, and then wrapped in cloth, a process which is repeated until it becomes heavily encased. It is buried with prayers by the panditas, which ceremony is followed by a period of mourning. At the conclusion a feast is spread, to which all friends of the deceased are invited.

Among the Sámal Laut, at the approach of death, a priest is called in to read from the Koran or intone prayers. The corpse is carefully washed and wrapped in white cloth; or, if the family is poor, cloth of other color, even matting may be used. The body is placed in a wooden coffin and buried with eyes open and the face toward Mekka. A simple ceremony, consisting of prayers and selections from the Koran, is held at the grave, which is sometimes scattered with sandalwood water. The place is usually marked by a modest canopy of cloth supported by low posts. Returning home the family of the deceased is expected to sit up several nights mourning the dead and reading the Koran. Tom-toms are often dolefully beaten as an expression of sorrow, especially if the man be of prominence.

In spite of their living almost entirely in boats and wandering from place to place, the Bajaus never bury their dead at sea, but always on a particular island, regardless of the distance they may have to travel to reach the burying ground. Everything belonging to a Bajau, including his money, is buried with him. Even his boat is cut up and buried.

In an interesting monograph, written in 1901, by the Rev. Pio Pi, superior of the Jesuit order in the Philippines, and published by Maj. Gen. George W. Davis, U. S. Army, commanding the Division of the Philippines, in his annual report of 1903, the author presents a carefully written, concrete opinion of the Moros, based on the experience of the Jesuit fathers, who were missionaries among them for many years. The following extracts are somewhat abbreviated to adapt them to this report:

We have no scruple in affirming, and we do not believe that there is anyone who will be so rash as to deny, that the principal obstacle in the way of the reduction[1] and civilization of Mindanao and Joló is the Moro. We shall devote some space to prove this and to indicate some means for overcoming this obstacle.

In two senses are the Moros opposed to reduction and culture in the archipelago. First, in that they prevent reduction and civilization for themselves; and second, that they impede its reaching the other infidel races. The Moros are interested and anxious that Mindanao shall continue the present status quo indefinitely throughout that territory, seeing that they can not extend their lordship over all.

And to this they are influenced by: First, their character; second, their history or tradition; third, their fanaticism; fourth, their interests. Concerning these four points we will make a few brief remarks.

CHARACTERISTICS.

The Moros are haughty, independent, and domineering. They believe themselves to be the only sons of God. None are more zealous than they in their genealogies. To all the natives not Moros they give the depreciatory title of Visayas, as we should say, pariahs. In carriage, attitude, manners, and dealings they are accustomed to

[1] *Reduction* equivalent to the English *conversion.—Director.*

show great asperity and disdain. Although poor, miserable, and needy, they show scarcely any gratitude to those who aid them.

History eloquently records with what tenacity they resist all domination; with what insincerity they submit; how treacherously they rebel. The subjection to the payment of any tribute whatever or to the recognition of the Spanish Government, even among those Moros living nearest to the Spanish settlements, where the action of the Spanish Government could more easily reach, has ever been an arduous undertaking, and has almost always been evaded. It may well be said that they were indifferent even to the most common legislation, nor do they take care to fulfill, for example, the requirements of public hygiene, the forestry regulations, etc., as though they were exempt from all law.

They consider themselves the true lords of Mindanao and Joló. All other native races are looked upon by them as inferiors, and from all of them, as far as possible, they collect tribute and exploit, vex, and raid them as though their neighbors had no more right than what they (the Moros) consented to give them. It is as common a thing for them to enter the settlements and villages, both of infidels and Christians, and to rob, kill, take captives, and destroy property as it was common for them formerly to scour the seas engaged in expeditions of piracy, for they believed themselves lords of the seas also.

Their ancestors were refractory to all reduction and civilization; and they desire to be like them. And, in fact, such is the history of more than three centuries, or in other words, of the whole time of the Spanish sovereignty in these islands. The Moros have been the only, but constant and tenacious, enemies of the civilization brought here by Spain. Run through the list of the sultans of Joló and Mindanao and investigate the deeds of the principal datos and it will be clearly seen, in spite of the passing of centuries, that what was done by an Ali-Aliudin was done by an Amitol-Quiram; what a Corralot did has been repeated by Uto in what relates to the acceptation of the European domination and civilization. The sole difference is in the degree of resistance offered by the one or the other, more or less rigorous, more or less declared, more or less efficacious, according to the power the said dato had to reckon with, or the importance to which he was reduced. The most obdurate opposition of soul and of instinct, the most obstinate passive resistance, the most pertinacious and vigilant intention of really revolting whether by the aid of strength or craftiness, the very moment the material impossibility of success ceases, or his own personal convenience, which caused him to be temporarily and feignedly submissive, is threatened. This, at least, is the attitude and constant disposition of the average Moro and of his race against the dominating nation, no matter what be the material power which holds him subject for the moment, or the moral or legal obligation of preserving the most formal treaties and covenants.

The religious ignorance of the Moro of the Philippine archipelago is universal and almost absolute, even in relation to affairs concerning Mohammedanism, since all his instruction, and little it is, is reduced to the poor reading of the Koran without understanding what he reads. They have, however, a blind and everliving hatred of all things Christian, whether Catholic, schismatical, or Protestant; and this one thing they know for certain, that Mohammed commanded a holy war without truce or termination upon Christians, who, according to their idea, are infidels (or capir); and they believe that it is a meritorious thing to rob, and that to gain heaven it is sufficient to kill the Christians. Hence, they must cease to be Moros in order to resign themselves to support a domination so repulsive to their false beliefs.

The Moros acquire riches and preserve them principally by means of slavery, for their slaves are their servants both in their houses and on their voyages; they are the laborers in their fields, the workmen in their small industries, the instruments of their rapine, of their exactions, and of their vexations. They are the most

esteemed objects of commerce and the most available means for the making of treaties, settlement of business affairs and of differences, and for the contracting of matrimony, to all of which the dato must pay attention for his sustenance and comfort. The dato who owns many slaves is rich, and he who has them not has not wherewith to eat; hence, the energy exerted to obtain slaves without consideration of the means by which they are obtained; the continual stealing of children, not only from people of another race, but even from the Moros of other settlements, and the killing, on most occasions, of the parents in order the more easily to carry off the children. It is evident that this chief source of wealth of the Moro datos must cease the day the reduction aimed at by the Government reaches them.

The lands still occupied by the Moros in Mindanao and Joló are numerous, of vast extent, and finely situated. They embrace not a few entire islands, fertile territories, great coast lines, the channels and valleys of many navigable rivers or a great part of them, and the great and beautiful Lake Lanao, with its banks and cascades; all of which is a matter of importance, not only in the matter of the effective domination they exercise over the land, but also in the power they exert over the people who are their neighbors, and whom they do not permit to approach the rivers or the seacoasts so that they may the better shut them in, bury them in the interior, keep them from all communication with the exterior, and so the more advantageously subject and exploit them in the manner above stated. Hence the Moros understand thoroughly that in proportion as their reduction and civilization is advanced in the regions they inhabit, they will be less able to preserve their possessions and advantageous positions, at least under the conditions under which they occupy them at present, and much less can they maintain them for themselves without interference from the white race, which is the way in which they desire to be and live.

The day in which the reduction becomes a fact all their autonomy and their political, military, and religious organization must cease to exist; an organization which insures the race its cohesion and duration in the country, and which, up to a certain point, they esteem; and if threatened with its loss they would rather resolve without hesitation to abandon the region they occupy, the settlements, their estates and crops, all their means of livelihood. Now, how wist their sultans, datos, panditas, and panglimas live, except at best as mere ornaments and historical figureheads, mere names without actual significance and offices without utility; even deprived in a very short time of the servile submission and stupid veneration of their sacopes; and both the one and the other with but the remembrance of their once entire exemption from law? Well they know that this would be the loss of the interior constitution of their people, the end of their nationality still sustained in those islands, and, above all, in their disappearance from the country as a distinct race.

A priori, then, it is well proved that, far from the Moros being an element favorable to the reduction, colonization, and civilization of Mindanao and Joló, they constitute in their present state, as they ever will be while they enjoy their autonomy and organization, a most powerful obstacle in the way of obtaining that desideratum.

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But there is a fact, although a negative one, which confirms moreover this statement a posteriori, namely, the hostile disposition of the Moros to all that the reduction, colonization, and civilization of the country implies. Who, in fact—Spanish, foreigner, or even native—has ever been bold enough to locate any establishment, undertake any exploration, break or cultivate any portion of the soil amidst Moro settlements?

Even in Christian settlements already formed, the number of estates is small and these few exist only in the outlying districts of the settlement and under the shelter of some military detachment. One of these few is the estate of Rosales & Co.,

adjoining the military camp of Parang Parang; and of how many depredations has it not been the object! How many victims, Spaniards and soldiers, has it not cost! How many times was it not necessary for the troops to deal out punishment for the violences perpetrated there by their Moro neighbors! The same might be said of any other estate established in Cottabato, in Isabela de Basilan, or near the town and fortifications of Joló. And if in this latter place the German, Herr Shuck, succeeded in establishing himself, even before the Spanish occupation in 1876, acquiring and cultivating some tracts of land which his sons still possess, we shall find without doubt, for this singular fact very peculiar reasons, at least in the most admirable political arrangements made with the sultan by that old-time merchant; when, as such, he made voyages from Singapore to Maibún, and from Maibún to Singapore again.

Can we then deny great significance to this general want of all kinds of enterprises in Moro territory, on the part of even those who lived as neighbors in the same regions and in continual relations with the Moros? It will be necessary to recognize the fact that such proximity and relationship did not engender intimacy or confidence.

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And as we foresee that against what we are sustaining, some particular fact may undoubtedly be put forward, we will explain these facts briefly in order that it may be seen that they prove nothing against what we say.

It can not be denied, in fact, that there have been a few Moro datos who have always, or for a greater or less length of time, shown themselves sincerely friendly to the Spanish Government, and who, moreover, recognized the American Government as soon as it took possession of that territory. Why then, can we not hope to find the other caciques of this race the same, and expect that all will lend a hand in the reduction and reconciliation of the Moros to the new, common, and civilizing régime which America will establish, especially if that Government adopts a good policy of conciliation? Will not the Moros thus submissive and disposed of be an example and instrument toward the submission of the other infidel tribes of Mindanao, who will hasten to imitate them, thus facilitating and advancing the reduction and civilization of all that island?

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Hence, bearing in mind the small number of such datos, who they are, under what circumstances and with what motives they work, and that they conduct themselves in a manner which is unusual among the Moros, what can be deduced from these particular cases when compared with the constant, general, and never-failing tendencies of the Moros of this country and of all the world? Nothing, absolutely nothing! It is necessary then to do away with the obstacle which the Moros constitute, because otherwise the reduction will never be brought about, and much less will the civilization of the islands occupied by the Moros be accomplished.

In dealing with this race, refractory to all that is good, much may be said, and unfortunately, all that can be said is bad. When we say that it is refractory to all good, or to all civilization, we must be understood as speaking of its present organization, with its sultans, datos, and panditas, because if on a chosen day all these "birds" of the archipelago should disappear the other Moros would obey the constituted authority and become as meek as lambs.

The Moro datos, as a rule, spend their lives in gambling, and when they lack money for keeping up that occupation they sell the first thing that falls to hand, namely, the property of their vassals, of whose lives and property they are the absolute lords. Often have I heard complaints from Moros on this point, who had been robbed of their only carabao, and who were considered as having no right to reclaim or recover it, the actual possessor having purchased it from the dato; and it is looked upon as luck if they sold only the carabaos of their sacopes, for at times they would

sell some individual of the family, as it happened in the case of Emilio Calumpit, lost at play by his dato in gambling, and who, after several vicissitudes, went to Tamontaca and became a Christian. The lately deceased dato, Galan, the most famous gambler and greatest mountebank of all the river, gambled away the daughter of his slave, and neither tears nor prayers were of any avail to cause him to desist from tearing her away from the arms of her mother and handing her out to the winner of the game.

The Moro datos are notorious for their cruelty. Uto, the once famous Uto, perhaps one of the most cruel men of these later days, gave at times his slaves and sacopes, even for insignificant shortcomings, unheard of punishments; and other datos used to do the same thing, although less frequently. Those who escaped from him he punished by cutting the tendons below the knees so that they would be unable to run, and could walk only with difficulty. Others he ordered to be bound in a place swarming with red ants, which are very vicious and whose bites are poisonous and insupportable. Others he caused to be bound, naked, to the trunks of trees, and exposed by day to the burning rays of the sun and by night to the agonizing torments of the mosquitoes, which infest and molest that part of the world. That an idea may be formed of this torment, I will merely state that a calf was once purchased in Tumbao for the purpose of slaughter on the following day. The calf was left that night bound to the trunk of a tree and on the following morning was found dead. Everyone attributed its death to the cloud of mosquitoes that passed that way. For my own part I can say that one night, in Tumbao, I was seated in a canvas chair and was compelled to rise because the mosquitoes penetrated with their "lancelas," not only the canvas but even the habit and trousers. The men of the garrison of Reina Regente always put newspapers over the seats of their chairs, this being the only way to prevent the bites of the mosquitoes. It happened once that Uto put some one in stocks where he died slowly of hunger and misery, as the only food given him was some ears of corn which were thrown to him every afternoon in the same manner as they would be thrown to swine, serving rather to prolong his martyrdom than to nourish his body. Once a commander of a gunboat visited the house of Uto, in Chapacan, and came across a Moro there, dead in the stocks; there he had ended his days, and they had not even removed the corpse.

Another of the punishments meted out by the datos is that of throwing those they wish to chastise into the river with their bodies encumbered with an immense stone, but in such a manner that when the tide rises to its maximum height, the sufferer thus imprisoned has to stretch himself as much as he is able in order to prevent the water from entering his nostrils and mouth; thus they leave the victims at times for weeks in the water always exposed to death from drowning.

From the cruel dato, Andung, who ordered the death of Piang, there once escaped a slave, who hastened to take refuge in Tamontaca; but unfortunately the dato heard of his flight shortly after his having set out in a banquita. Andung followed in pursuit and immediately upon coming up with him put him to death with a kris.

About the year 1885 a schooner under command of a Dutchman visited Cottabato. It appears that, among other articles of commerce, he carried arms. Believing, doubtless, he would be able to transact business there, he made his way to the dwelling of the sultan. The result of his visit was that he was robbed of all he had in his vessel, which was scuttled and sunk; the crew were made captives and the Dutchman was tied naked to a tree while the surrounding Moros tested the edges of their krises upon his body, thus putting him to death by a slow, cruel process.

Guillermo Galmes (or Uring), at the time of the evacuation of Cottabato, remained in Tamontaca, and one day, having seen a banquita floating down the tide, he captured it. This fact became known to the dato, Diambungan, to whom the boat belonged, and he accused Galmes of theft, and for this supposed robbery imposed

upon him a fine of 60 pesos. As the accused was unable to pay, he was carried into captivity, together with his wife and four children. Later on, P. Beunasar, S. J., went there and, aided by the governor, reclaimed the said family. The woman and children were given up, but the man had been killed in an attempt to escape.

One of the gentlemen who came with the American civil commission recorded that in Joló he had seen a Moro who had always worn a large bandage to hide from public view his repugnant mouth, which was unsightly not from any natural defect, but because, having one day spoken disrespectfully to a dato, the chief ordered his mouth to be slit, and it was done with a kris, transversely, deepening it up to the articulation of the jawbone, the mouth in consequence remaining extraordinarily enlarged. The dato remained unmolested. According to his laws or customs, he could do as he wished.

I do not think it would be an easy task to find a haughtier people than the Moro datos. As a rule they are a miserable set, but believe themselves as important as Russian czars. Their pride is revealed in all their acts. In passing from one point to another they must always go under a "palio," or, in other words, an umbrella, gaudily decorated and surrounded by guards of honor armed with kris or campilan; and if they travel in their vintas the law commands that the drums and agungs must accompany them in their boats.

They are considered impeccable, and however great their faults may be they are not considered responsible for them. Dato Acco advanced this argument in the dispute which arose in the detachment of Tamontaca, in order to escape from being killed or bound. They did not know that although the dato is supposed to be irresponsible and invulnerable among the Moros he is not so among the Christians.

Once some Moros traveling in a banca with their dato asked for some coconuts from the now deceased H. Vinolas, and when the petition was refused received the reply, "He who asks is the dato." Vinolas still refused, and once again the Moros reminded him that it was the dato who wanted the coconuts. The Moros were dumbfounded to see, contrary to their customs, that he denied the dato what he asked.

Uto was accustomed to mount his horse by putting his foot upon the shoulders of one of his servants, who bent down purposely to accommodate the magnate. The writer once saw the act performed in Bacat.

Dato Mamon ordered the immediate death of one of his vassals who had made some irreverent gesture.

We have frequently seen presents made to some datos, and although the said presents were of some value and things appreciated by them, they always received them with apparent indifference as though they were of no importance; all this is a result of their haughtiness.

The wives of the datos likewise travel under a canopy and accompanied by their maids in waiting, who surround them chanting songs of a dirge-like nature, but which to them appear very agreeable music. At times also they mount their horses after the manner of the datos, using the shoulders of one of their slaves as a stepping block.

As the Moros are very fanatical and superstitious they look upon their datos as almost supernatural beings, a belief to which the panditas contribute greatly with their trickery; and thus it may be explained that in spite of the cruelty with which they ordinarily treat their vassals, there can scarcely be found a case where one of them has been found insubordinate or rebellious against his dato; the most they do is to attempt to escape, if an occasion offers, to some distant point.

Thus, haughty as they are, it is not strange that they should refuse to subject themselves to the rule of a civilized government. They do not desire to be governed by anyone, nor do they wish to have any communication with civilized beings. It

is sufficient to put a group of houses of Christian Indians close to a Moro settlement to see the latter disappear little by little. All the Moros who at the commencement of the occupation of Tamontaca lived around the neighborhood gradually disappeared. General Salcedo proposed the formation of a Moro village in Tukuran, but a few weeks after the occupation of that point by Spanish troops, there was not a single Moro habitation remaining of those formerly existing there.

That the Moros do not desire to be governed by anyone is evidenced by the wars of Joló, by that of Uto in 1889, by those of Lanao in 1897 and 1898, not counting the many previous wars which Spain was constantly obliged to wage against the Moros. All the several races of the Philippines, one after the other, subjected themselves to the yoke of Spain and entered into the ways of civilization. And the Moros? As far as concerns later times, the only thing that has been accomplished with this race is what was done at Tamontaca, and well we know how it was obtained, by what means and at what cost. And there not a single dato was baptized, not because they can not be converted, but because their organization and autonomy makes their evangelization exceedingly difficult.

Among the Moros there scarcely exists one who is not a ladrone. This is not strange to anyone who knows a little of the race, for the dato being the one who robs in the most barefaced manner, can it be expected that his vassals will not rob also? And let not the reader suppose that this vice is confined to datos only; it is the same with all. They do not commit the robbery themselves, but they have at their orders those who are expert and accustomed to the work. Once a Tiruray who knew perfectly well this *tinglado* was explaining it to me and said: "Dato A has so many, etc." One of their maxims is that to rob another settlement, above all if there be any enmity between the inhabitants of the two, is not fault. Such actions are so general that they are the common practice of all. At the southern mouth of the Río Grande de Mindanao there lived and still lives the dato, Ara, who without any doubt is the most reasonable and decent of all the people of the river; and in spite of this we are aware that among his carabaos there are some branded with a cross, the mark of the mission of Tamontaca.

Of the history of the Moros it may be added that it is nothing more or less than a series of treacheries both in Spain and in our possessions, in Morocco and the Philippines, for when have the Moros been found faithful? They submit to reduction for convenience or because they are powerless to resist. Or, in other words, are faithful in keeping treaties as long as it suits them, or while they have not sufficient strength to free themselves therefrom.

Within the last year and a half one Mariano Doz, who several times has been skipper of the vinta of P. Beunasar, in his voyages to Lebac found a good rice field in that part known as Linas, close by the river Tran. As he had good rice that was to yield a heavy crop, friends were not wanting to warn him not to trust the Moros, but he took no notice of these warnings. One day some Moros sent by Matabalan, dato of the river Tran, visited him and entered into a very interesting conversation with him on the seashore; according to the custom of the country they chewed the buyo together, but suddenly drawing their krises the Moros killed him. Immediately there appeared two more vintas which were nearby, and while one took up a position at the point as a watchman the remaining Moros busied themselves in cutting the rice and carrying it to the dato.

About the year 1884, two Moros who had escaped from the clutches of Uto, reached Tamontaca. Both received Christian instruction in preparation for baptism. One day in the market place of the same settlement, an emissary of Uto entered into a friendly conversation with one of the two; while chewing the buyo together the emissary of the magnate, sent, as was afterwards known, with that object in view, suddenly drew his kris and cut off the Christian's head; without the possibility of

his being captured, he escaped among the people, who were struck with amazement at the boldness of the deed.

A short time previous to the evacuation of Zamboanga by the Spanish troops, several families of Tamontaca who had followed the fathers to that capital wished to return once again to the former settlement. For this purpose two or three large vintas were hired. P. Beunasar gave them letters of recommendation to the datos, Benito and Mamogueten, the former having always been high in praise of the Spaniards and the latter always a great friend of P. Juan Marti, from whom he had received so many favors. The former ordered the death of several of these people, and the captivity of others with several women, although he afterwards freed them at the instance of Mandi. With the same end in view, some others were also detained for a day and a night; and if he finally did not carry out this idea it was because of the threat of one of the prisoners that P. Beunasar would return to Cottabato in a gunboat.

Another case that may be cited in this connection to prove the treachery of the Moros is that of the treachery of Balabag.

PUBLIC POLICIES IN CONNECTION WITH THE MOROS.

What, then, should be the plan of procedure? We have already been taught by abundant experience, and we shall briefly expound a plan based on that experience.

Above all, be it understood that we are not going to defend the extermination of the Mohammedan race; on the contrary, we reject it as unjust, inhuman, impolitic, most difficult, and very costly.[1]

The system we are about to propose for the reduction to civil life of the infidel tribes of Mindanao and Joló under the government of the archipelago is different. It must be remembered that some Moros have submitted, although not voluntarily, while others have not, and that among the infidels or mountain tribes some are under the thumb of the Moro, while others are not. The system of political action of the Government must comprehend the four following enterprises or operations intimately connected with the one or the other, procedure being made gradually in each one of them, although at the same time in all jointly: First, the assimilation of the submissive Moros to whom the action of the Government reaches, with the remaining population of the islands; second, the liberation or emancipation from Moro slavery of the infidels who are under the dominion of this race; third, the extension of the effective domination of the Government over the Moros not yet really submitted or still beyond the action of the said Government; and, fourth, the decided protection of Catholic evangelization of all the region. We will amplify this thought point by point.

The four reasons explained above why the Moros are a great obstacle to the reduction and civilization of Mindanao and Joló will cease to exist as soon as the assimilation of the race under a common régime is effected. It must be noted, however, that those four qualities we have described in the Moro do not exist among the whole people in general, but among what we might call the aristocracy, or rather caciques, who, as is well known, are such generally by right of blood, and that in so far as the popular mass participates in the said qualities in that same degree do they derive it from their chiefs who foment it. The Moro population of the Philippines is what it is by reason of its sultans, datos, panditas, and panglimas. This organization being suppressed, not in what relates to matters purely religious (which it will be necessary to tolerate to the same degree as other false religions are tolerated), but in matters political and military, the Moro population of the Philippines will be in

[1] See memorandum written by P. Pablo Pastell, ex-superior of the mission of the society, published as the appendix to Volume IX of the Cartas of the Missionaries.

a very few generations no more or less than the remaining population. What we have said relative to the character of the Moros—haughty, independent, and domineering—is to be said principally of their datos and panditas. These are, moreover, the only zealous guardians of their traditions, superstitions, and fanatical hatred of Christianity, and they and not the people are the ones really interested in the maintenance of their social and political status quo.

It is necessary, in order to understand thoroughly what we say, to know, and even better to realize by experience, what these datos are among the Moros. The dato is, as a general rule, and with very rare exceptions, a semisavage when he is not entirely a savage; he is as haughty as he is ignorant, embruted by the blackest passions, polygamy, and other vices. He is held by his sacopes, and represented by his panditas or priests, to be an extraordinary being, a demigod, against whom he who dares to raise a hand or to despise shall be held in disgrace before man and cursed by God. Thus it may be explained that in spite of their continued and horrible cruelties not a single case is recorded in which any one of the sacopes has attempted to do the least harm to the person of the dato; and thus also it is explained how they scarcely ever dare to try to escape their tyrannical power; because they believe (and the panditas take care to assure them of it) that if they flee, doubtless a greater misfortune than the slavery or the maltreatment they suffer will overtake them. Hence the dato is a veritable lord of the lives and property of his subjects, and these he is able to turn to his own account without reserve, without the rightful owners being able to complain, much less to have recourse to another authority, when they are despoiled, exploited, or chastised with inhumanity and arbitrariness beyond imagination; and finally the dato is the only one interested in the maintenance of slavery, as we stated above. What estimate of the civilization offered to him will a man have who finds himself satisfied with his pride and brutal passions, a man who does not realize the existence of things better than those he possesses? How will he accept willingly a social state ordered and ruled according to the demand of the greater good of the public, he who is the law and who rules according to the dictates of his own passions?

If, then, the datos of Mindanao and Joló are such in their dealings with one another, and such they usually are, and in perfect accord concerning the objects of their common and chief interests, consider how great ought to be the opposition to Filipino Moroism, extensive as it already is, so widely influenced and governed by such an aristocracy. It is therefore evident that the action of a good government ought to be directed toward the undoing of such an organism as Moroism constitutes, which is a nationality or state within another sovereignty systematically and obstinately opposed to the ruler's civilizing aims. Why, then, should not the submissive Moros, or those who are so called or wish to pass for such, be subjected to the popular organization adopted generally in Mindanao for the reduction of these heathen? Not many years ago this was tried, and not without good results, among the Moros of the fourth district (Dávao), who commenced to live under gobernadorcillos (petty governors), lieutenants, and judges elected by the people and subject to certain services and personal labor contributions. This arrangement should be followed and continued without interruption until, gradually and in due time, as we have previously indicated, complete political, administrative, and judicial uniformity shall have been attained

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We have already spoken of the sad oppression and miserable state in which the Moros of Mindanao hold the neighboring infidels, who compose the tribes in the south and a considerable part of those in the north. From these tribes they provide themselves with slaves; they collect taxes in the form of provisions and enforced labor; they rob, or at least they purchase from them for whatever trifle they have a

mind to give them, their scanty harvests and manufactures. They prevent them from engaging in all commerce which is not carried on under the immediate supervision of the Moros themselves; they aim whenever possible to conceal them or keep them at a distance from the missionary; they exercise against them all kinds of arbitrary measures, and when they feel so inclined make war upon them and invade their settlements, bringing fire and death; and how will these people, who treat their subjects as harshly as we have seen above, treat a foreign people?

The enterprise, therefore, of the emancipation of these poor natives, an emancipation which would be an act of great humanity for any individual, is one of rigorous justice for the government of the nation which is the sovereign of the territory.

On the other hand it is an enterprise which ought to be undertaken, because there is a question of populating an island still sparsely populated, and this is the principal element with which we have to reckon. It is certain, that while writers of the archipelago have for many years been disputing to no purpose about the problem of the colonization of the island by means of this or that scheme of emigration, promoted by the government of the Philippines, the missionaries have been busy gathering together into pueblos many thousands of infidels who were previously completely useless for the purpose of colonization, since they destroyed one another in continual petty conflicts, completing the havoc made among them by famine and pestilence and thus causing the death of those spared by disasters.[1] The system still was a slow work, but it is surer than any other; it does not offer the grave inconveniences of all the others which have been attempted, and to this very day is the only efficacious one, if we leave out of account the not inconsiderable spontaneous immigration which has gone on from the other neighboring islands of the archipelago.

Whoever wishes to gather more information concerning what we have said should study the statistical reports annually published by the mission of the Society of Jesus and read the above-cited memorandum of P. Pastell and the statement of P. Juan Ricart, another ex-superior of the mission. The latter is to be found in Volume X of the letters of the missionaries. The increase of Christian and civil population in Mindanao in the last twelve years of Spanish domination is owing to two causes, namely, evangelization and native immigration, one-half to each.

The government of the Philippines should be encouraged in this enterprise by the consideration that the infidels are still in great numbers in Mindanao; that they are not less intelligent than the Moros and certainly more docile and accessible, and many of them as susceptible of culture as the best races of the archipelago; that the labor undertaken in their reduction and Christianizing, under equal circumstances, gives much better results than those employed in civilizing the Moros; and that the thinly populated district of south Mindanao would have been very different now, and the production of hemp, sugar, coffee, cocoa, copra, etc., incomparably more extended and beneficial in those most fertile regions had the Subanos, Tirurayes, and other infidels been free from the harassing tyranny of the Moros, and had these districts been free from their effective domination, which has always proved sterile and sterilizing wherever it has existed.

To help on this emancipation in all possible ways it will be necessary: First, that the Government should declare publicly and formally that it will receive and shelter under its banner, power, and protection, with entire equality, all its subjects of Mindanao who recognize it, whatever may be the race to which they pertain, and that consequently the authorities of the island and the officials will administer jus-

[1]The number of those reduced to civilized life and baptized by the Jesuit missionaries alone amounts to more than 70,000, representing the labor of forty years, although at the beginning of that time they had under their care but few missions or centers of action.—*Director.*

tice with the same equality among individuals as among communities of distinct races; second, that it should be absolutely prohibited for any individual, or cacique of any race whatever, to capture or enslave other individuals of another race; third, that every slave or captive, whether of a foreign or the same race or settlement, who in anyway should effect his escape and put himself under the protection of the Government should be held free from all subjection to his former master, and that the master should have no right whatever or title to indemnification; fourth, that the Moros, or those of any other race whatever established on the coasts, along the course or at the outlets of the rivers, be obliged to permit free passage over all water and land ways and free access to the shores and anchorages to all those other races who live in the interior, and not to impede anyone in passing from one place to another; fifth, that there be a general prohibition to collect tribute of any kind whatever from the natives of other races without the express approbation of the Government; sixth, that provision be made that any assault or arbitrary action committed by the caciques of any race whatever upon the persons or property of the individuals of another, whatever be the condition of the person committing it, be rigorously chastised; seventh, that provision be made that some Government vessels patrol the coasts occupied by the Moros and be anchored opposite their settlements, and even that gunboats of light draft should ascend the navigable rivers where the said Moros live in order that some agent of the Government may visit the settlements, correct abuses, give audience, and dispense protection to anyone who considers himself aggrieved; eighth, that it procure that all these dispositions and others leading to the same end be perfectly fulfilled, so that after a few severe chastisements many disturbances may be avoided and what is aimed at be attained.

It is our opinion, and more especially in view of what we have just discussed, that it will be of great interest to the country, and something to which the Government ought to direct its political labors with decision, to proceed to the reduction of Moroism, as it exists in the Philippines, to a perfect assimilation with the remaining population under a common law, and this under the penalty of driving it from the territory by means of war, unless perhaps the Government should prefer to concentrate it in some specified spot (a particular island or group of islands, for example), where the Moros might live with more or less autonomy and protection, or with total independence. Otherwise the Mohammedan-Malay race will be ever in the Philippines, not merely in Mindanao or Joló, a powerful element of disturbance.

To adopt the third suggestion, that is, to concentrate the race in some point of the archipelago, does not appear to be a sufficiently radical remedy nor a solution very worthy of the civilizing aims of a cultured nation in dealing as it must with a race so abject, deceitful, and likely to break out in treacherous rebellion.

Our whole aim was to accomplish the perfect assimilation of the Moros into the other races, for, apart from other considerations, Moroism constitutes a nucleus of population by no means to be despised, even supposing that the alleged number of 350,000 exists in Mindanao alone (this to some appears to be somewhat exaggerated); and it would avail much to our purpose to bear in mind to a greater or lesser degree what we have already said, as well as some things we have not mentioned.

But if in the end Moroism exists and determines at all costs to preserve its present autonomy and its organization, and if on the other hand its concentration in a limited strip of territory—a reservation—be not adopted by the Government and accepted by Moros, there remains no other course than to appeal to arms to obtain without hesitation the assimilation of those who submit and the driving out of those who prefer such a course to submission.

From all points of view, whatever may be the designs of the Government, we can not suppose that it would consent to the unfurling of any banner but its own in all the Filipino territory, or that another distinct sovereignty be exercised over the territory, large or small, which it occupies.

And in order not to remain silent concerning the measures which to all appearances it is well to adopt immediately, in order to extend the effectiveness of the dominion to all the territory of the Moros not submitted, we will do no more than indicate in general terms these three:

1. The recovery by the Army and Navy of all the ports, bays, and anchorages, forts, and strategic points and outposts occupied in the last days of the Spanish sovereignty by the Spanish army and navy, so that later on new positions may be gradually taken.

2. To patrol as frequently as possible with gunboats or war launches the coasts and navigable rivers inhabited by the unconquered Moros. This alone will suffice to secure either their submission by their entering into a treaty with the dominating race or their emigration to some place where they will not be molested by visits which they do not care for.

3. To treat of establishing among them in the meanwhile a worthy, just, and rigorous policy, which, while being neither irritating nor hard, might not give any evidence of cowardice or fear nor reveal any weakness; that no countenance be given to abuses against them (the Moros) even by the white race, but that those who injure in any way the dato or sultan be chastised without hesitation; that the people of that race or any other tribe be protected against all injustice committed by caciques; that the Government permit all lawful commerce to the Moro; that it utilize and justly recompense, even for public works, their labors and services. Perhaps some would give the name of "policy of attraction" to such a policy as we advocate; in that case we find no exception to the term. But in no manner can we approve a more flattering and less decorous policy in dealing with the Moros, call it what you will.[1]

The Moros are unexcelled pirates, and slaves constitute perhaps their greatest wealth. It is well known that within the last quarter of a century formidable fleets of vintas sailed continually from Joló and the Río Grande and, after sacking some pueblos of the Visayas, returned to their strongholds loaded down with the booty and with captive Christians. Their hatred inspired them at times even to approach the walls of Manila. The then bishop of Cebú, Señor Gimeno, did not desist from petitioning the Spanish Government to occupy southern Mindanao, in order to put a stop to such piracy. He sent every year a record of the people of his diocese who had been captured by the Moros, and at times the number reached 2,000. At times whole pueblos were captured and the churches robbed of every object of any value they contained. At last the Río Grande was occupied, and, later on, Joló. Several *faluas* (small rowboats) were sent down, but they were so heavy that when they were rowed they scarcely moved; while the Moros in the vintas, which were generally very light and of but little draft, had the laugh on them.

[1] I understand and believe it to be the common opinion that the conduct of Spain in dealing with the Moros of Mindanao and Joló in the latter days of her sovereignty, under a pretext of a policy of "attraction," was characterized by excessive toleration or condescension. I do not know whether this state of affairs was due to the individual character and temperament of good-natured governors, who were not overscrupulous in upholding the dignity and honor of their country, or whether it was owing to inordinate fear on their part of the complications that might arise from an energetic course of action; and who knows whether at times it may not have been owing to the loose moral tone of their private life or to the political corruption of officials, both high and low, intent only on filling their pockets. This policy was shown in the open violation of the common laws with impunity, in odious exemptions, in a marked preference and favor shown to the Moro race, and in undue obsequiousness shown, and undeserved honors and attentions paid, to their utterly repugnant magnates. I, myself, was for some years a witness of the contempt, of the shame and confusion, felt by the honorable Spanish element, especially the military who lived in the southern islands, under such a pusillanimous government, for the result was always the opposite of that desired, making both the subdued and unsubdued Moros haughty and ungovernable.—*Director.*

Hence the faluas were useless to prevent piracy; but later on when the gunboats came the scene changed. The vintas met with on the high seas were overhauled and if suspected were searched, and if contraband was found aboard it was confiscated and the crew made prisoners. A great many were sunk, and in this manner in less than a year piracy was stamped out in the south. From that time on the Moros could no longer conduct their piratical expeditions to the Visayas or to other ports. But then they began stealing children among themselves. The Moros can not exist without their slaves, and when they can not have Christian ones they procure them from among their own race. Malabang and Barás have been for a long time the chief markets of human flesh; and to the said points were carried those captured in Lanao, to be sold to the Chinese of Cottabato or to the Moros of the Río Grande. And there also were sold those captured in this last-named place to be sold in turn to the Moros of Lanao. In this manner, to a great extent, escape from their masters was almost impossible, as they were far from their own settlement and in an unknown region. The immense majority of the children who entered the refuges established at Tamontaca were Malanaos; and it was interesting to hear them recount the manner in which they had been captured.

From the time that the gunboats commenced to cross the seas of the south to a degree did piracy cease at sea; for the seventeen years that I was on the Río Grande I received notification of only three or four Christians being captured. But the practice was renewed after the evacuation by the Spanish, when a Filipino government was left in Cottabato. This was succeeded by the American Government after the cataclysm of crime and violence with which we are all well acquainted.

In concluding this subject I will mention the following: Some time since, speaking with the American colonel at Zamboanga and with the commanding general at Cottabato, I told them that it appeared to me that the Moros went to Río Grande and neighboring shores in Joloano pancos loaded with arms, which they sold at these places, and returned loaded down with Tirurayes. Although the said officers did not deny this they doubted it, or believed, at least, that the tale was exaggerated. The following occurrence dispelled their doubts:

On the 29th of April the launch of Cottabato, which had come to Zamboanga three days before, returned, having as passengers myself and two American officers. A good distance before reaching Punta Flechas we discovered a white object on the larboard. We soon knew it to be a vinta. The captain of the launch remarked, "Surely that is a Joloano panco, and if it is going that way they are certainly carrying arms, and if it comes thence it carries Tirurayes." In Spanish times this boat would have been examined. "Shall we examine it?" said the captain, as though defending his honor. No sooner said than done. It was in fact a Joloano panco, the crew of which, seeing us bearing down upon it, let down its sail and hoisted the American flag. However, the flag proved of no value to them. The captain boarded her with four marines and commenced his examination. In half a minute they discovered in the hold large quantities of cartridges, carbines of various classes, rifles, (Remingtons,) and a large case of cartridges and pistols. The panco was taken in tow, and together with its crew carried to Cottabato, where the captain and crew were thrown into prison.

Our task is done. It will be a happy day when the Government of the United States becomes convinced of the existence of the obstacle to civilization we have here denounced and of the possibility and necessity of removing it for the common welfare of the country.

APPENDIX I.

[No. 467.]

AN ACT To provide for taking a census of the Philippine Islands.

By authority of the United States, be it enacted by the Philippine Commission, that:

SECTION 1. A census of the population by name, age, sex, race or tribe, nativity, and literacy, of school attendance, of ownership of homes, and of industrial and social statistics for each province and municipality, and other civil divisions of the Philippine Islands, in accordance with the Act of Congress, approved July first, nineteen hundred and two, shall be taken in the year nineteen hundred and three.

SEC. 2. There shall be established in the Department of Public Instruction a Census Bureau, the chief officer of which shall be the Director of the Census, who shall be appointed by the Civil Governor, by and with the advice and consent of the Commission. The Director of the Census shall be charged with the collection, tabulation, and publication of the statistics required by this Act. He may be, with the consent of the President of the United States, a general officer of the United States Army. In case a general officer is thus appointed, he shall be paid, in lieu of all allowance for forage, fuel, and quarters, to which he would be entitled under the Army regulations, the sum of ten dollars per diem, payable out of the Insular Treasury.

There shall also be two Assistant Directors of the Census, to be appointed by the Civil Governor, by and with the advice and consent of the Commission, who shall be experienced, practical statisticians, and who shall be paid a salary of seven hundred and twenty dollars per month each, and whose appointment as Assistant Directors of the Census may be terminated by the Director of the Census as soon after their return to the United States as may be desirable: *Provided, however,* That nothing herein contained shall be construed to establish a permanent Census Bureau.

SEC. 3. During the absence or disability of the Director of the Census, one of the Assistant Directors, to be designated by the Director, shall perform the duties of the Director, and at all other times the Assistant Directors shall perform such duties as may be prescribed by the Director of the Census.

SEC. 4. There shall also be in the Census Bureau, to be appointed by the Director thereof, one chief clerk, who shall receive a salary at the rate of two thousand two hundred and fifty dollars per year; three secretaries, each at a salary of one hundred and fifty dollars per month; six clerks, each at a salary of one hundred and thirty-three dollars and thirty-three cents per month; and such number of clerks and skilled laborers, at a monthly salary of not more than eighty-five or less than sixty dollars per month, to be appointed from time to time, as may be found necessary for the prompt and proper performance of the duties herein required.

SEC. 5. The collection of the information required by this Act shall be made under the direction of the Director of the Census by supervisors, enumerators, and special agents, whose inquiries shall be restricted to the population, schools, agriculture, and industrial and social statistics, separately for each province and municipality and

other civil divisions as the census schedules, approved by the Secretary of Public Instruction, may require: *Provided*, That whenever an official registration of mortuary or other statistics is and has been maintained, the Director of the Census may employ experts or special agents to investigate and ascertain such statistics, whether of manufacturing, railroad, fishing, mining, telegraph, express, transportation, insurance, banking, or of such other industries as the Secretary of Public Instruction may direct.

SEC. 6. The supervisors, enumerators, and special agents shall be appointed by the Director of the Census, by and with the advice and consent of the Civil Governor: *Provided*, That all insular, municipal, and provincial officials, and such officers and enlisted men of the Army as may be designated by the Commanding General, Division of the Philippines, shall be eligible to appointment.

SEC. 7. For the purposes of this census, the Director of the Census shall divide the Philippine Islands into fifty supervisors' districts, more or less, the boundaries of which shall, whenever practicable, conform to the boundaries of the insular provinces. Each supervisor shall be duly commissioned by the Civil Governor, and before entering upon his duties, shall take and subscribe the following oath before any official authorized to administer oaths:

"I, ..., supervisor of the ..... supervisor's district, do solemnly swear that I recognize and accept the supreme authority of the United States of America and will maintain true faith and allegiance thereto, and that I will, to the best of my ability, enumerate, or cause to be enumerated, all the inhabitants of such district, and will collect, or cause to be collected, the other statistical information within the same, as required by law or regulation, and will faithfully perform all the duties enjoined on me by law providing for the taking of the Census. So help me God."

This oath, when duly executed, shall be forwarded to the Director of the Census and duly filed in his office.

SEC. 8. Each supervisor of the Census shall be charged, within his district, with the performance of the following duties:

First. To consult with the Director of the Census in regard to the division of his district into enumeration districts most convenient for the purpose of enumeration, which districts and the limits thereof shall be fixed by the Director of the Census.

Second. To nominate to the Director of the Census suitable persons as enumerators and special agents within his district, one or more for each enumeration district, who shall be resident therein. In case it shall occur in any enumeration district that no person is qualified and willing to perform the duties of enumerator, the supervisor may nominate any fit person to be the enumerator of that district: *Provided*, That in no case shall a supervisor nominate as enumerator or special agent his father, mother, son, daughter, niece or nephew, or any other relative by blood or marriage within the fourth degree.

Third. To communicate to enumerators and special agents the necessary instructions and directions relating to their duties as enumerators or special agents, taking care that they are perfectly understood.

Fourth. To examine thoroughly the schedules and other returns and reports of the enumerators and special agents, causing all discrepancies or deficiencies appearing on them to be corrected or supplied, and to forward them to the Director in such time and in such manner as shall be prescribed by him.

Fifth. To make such visits of inspection throughout his district as may be necessary to ascertain the progress and efficiency of the enumeration.

Sixth. To prepare and forward promptly at the close of each month to the disbursing officer designated to make payments in his district in behalf of the Census,

all accounts and vouchers covering the service of himself, his clerk, his messenger, and each enumerator, as well as for other necessary expenses, which vouchers the supervisor shall certify to be true and correct. Payments on such vouchers may be made by check in favor of each person to whom payment is due, or in money, as may be most convenient. All accounts of special agents and enumerators shall be sworn to by them as correct and just before the same are submitted to the district supervisor for certification for payment by the designated disbursing officer.

The duties imposed on the supervisors by this Act shall be performed in any and all particulars in accordance with the instructions and directions of the Director of the Census, and any supervisor who may abandon, neglect, or improperly perform the duties required of him by this Act, may be removed by the Director of the Census.

Each supervisor shall receive a salary of one hundred and seventy-five dollars per month, such sum to be in full compensation for all services rendered and expenses incurred by him: *Provided, however*, That when he is traveling under orders or in serious emergencies arising during the progress of the enumeration in his district, or in connection with the enumeration of any subdivision, he may, in the discretion of the Director of the Census, be allowed the actual cost of transportation and one dollar and fifty cents per day, money of the United States, in lieu of subsistence, during his necessary absence from his place of residence in his district. He shall also be entitled to one clerk at a salary of sixty dollars per month, and one messenger at a salary of thirty dollars per month: *Provided*, That one-half of the salary due each supervisor shall be withheld and not paid him until after the schedules or other returns and reports required of him shall have been duly rendered to the Director of the Census.

SEC. 9. Each enumerator and special agent shall be commissioned by the Director of the Census, and before entering upon his duties shall take and subscribe to the following oath before the supervisor of the district or any official having authority to administer oaths:

"I, ..., an enumerator (or special agent) of the ..... supervisor's district, do solemnly swear that I recognize and accept the supreme authority of the United States of America, and will maintain true faith and allegiance thereto, and that I will make a true and exact enumeration of all the inhabitants within the enumeration district assigned to me, and will also faithfully collect the other statistics therein in the manner provided by law for taking the Census, and in conformity with all lawful instructions I may receive, and will make due and correct returns thereof in the manner prescribed. So help me God."

This oath, when duly executed, shall be forwarded to the supervisor, and by him to the Director of the Census, and filed in his office.

SEC. 10. Each enumerator shall be charged with the collection, in his enumeration district, of the facts and statistics required by the population schedules, and such other schedules as the Secretary of Public Instruction may prescribe for use in connection with the Census. It shall be the duty of each enumerator to visit personally each dwelling house in his district, and each family therein, and each individual living out of a family in any place of abode, and by inquiry made of the head of each family, or of the member thereof deemed most creditable and worthy of trust, or of each individual living out of a family, to obtain each and every item of information, and all the particulars required by the Census schedules, and of such date as may be hereafter prescribed by the Commission as the day on which the Census shall be taken. And in case no person shall be found at the usual place of abode of such family, or individual living out of a family, competent to answer the inquiries made in compliance with the requirements of this Act, then it shall be lawful for the

enumerator to obtain the required information, as near as may be practicable, from the family or families, or person or persons, living nearest to such place of abode; and it shall be the duty of each enumerator to take in person, or forward by mail, as may be most expeditious and secure, the original schedule, duly certified, to the Supervisor of Census of his Census district, and in the event of discrepancies or deficiencies being discovered in his said schedule, he shall use all diligence in correcting or supplying the same as the supervisor of his district shall direct. As far as practicable, each enumeration district shall be coterminous with municipalities, entire barrios, or incorporated cities, but when this is not practicable, and an enumeration district shall include a part only of a municipality, barrio, or incorporated city, it shall be the duty of the enumerator of such district clearly and plainly to distinguish, and separate in the population schedules, the inhabitants of all or any part of such municipality, barrio, incorporated city, from the inhabitants not included in his district. Each enumerator and special agent shall receive a salary of two dollars and fifty cents per diem, such sum to be full compensation for all services rendered, and all expenses incurred by him, the hire of boats when actually necessary excepted, for which he shall be allowed the actual and necessary cost if approved by the supervisor of his district: *Provided*, That eight hours of active enumeration shall constitute a day's work, and that one-half of the salary due each enumerator or special agent shall be withheld and not paid him until after the schedules or other returns or report required of him shall have been duly rendered to the supervisor of his district.

SEC. 11. In the event of the death of any supervisor, enumerator, or other officer or employee of the Census, after his appointment and entrance on his duties, the Director of the Census is authorized to pay the legal representatives of such deceased official or employee such sum as he may deem to be just and fair for the services rendered by said official or employee, not exceeding in any case the per diem allowance provided in the preceding section, for the days during which the deceased was actually employed.

SEC. 12. The district assigned to any enumerator shall not contain more than one thousand five hundred inhabitants for urban, or more than one thousand inhabitants for suburban or rural districts, according to such estimates as may be considered reasonable by the Director of the Census, and the boundaries of all enumeration districts shall be as far as practicable those of barrios or other civil divisions, or rivers, roads, or other easily distinguished lines: *Provided*, That enumerators may be assigned for the special enumeration of institutions, when desirable, and that competent women may be employed in taking the Census.

SEC. 13. Any supervisor of the Census may, with the approval of the Director of the Census, remove any enumerator in his district and fill the vacancy thus caused or otherwise occurring. Whenever it shall appear that any portion of the enumeration and Census provided for in this Act has been negligently or improperly taken, and is by reason thereof incomplete or erroneous, the Director of the Census may cause such incomplete and unsatisfactory enumeration and Census to be amended or made anew under such methods as may, in his discretion, be practicable.

SEC. 14. The Director of the Census may employ, and may authorize and direct supervisors of the Census to employ, interpreters to assist the enumerators of their respective districts in the enumeration of persons, the compensation of such interpreters not to exceed two dollars and fifty cents per day, for each day actually and necessarily employed.

SEC. 15. No Census clerk, interpreter, or messenger shall enter upon his duties until he has taken and subscribed to the following oath:

"I, ..., do solemnly swear that I recognize and accept the supreme authority of the United States of America, and will

maintain true faith and allegiance thereto, and that I will honestly and faithfully perform such duties in connection with the Census of the Philippines as may be intrusted to me. So help me God."

This oath, when executed, shall be forwarded through the Census supervisor of the proper province to the Director of the Census and be duly filed in his office. No supervisor, supervisor's clerk, enumerator, or special agent shall be accompanied by, or assisted in the performance of his duties by, any person not duly appointed as an officer or employee of the Philippine Census, and to whom the oath or affirmation has not been duly administered. All appointees and employees provided for in this Act shall be appointed or employed solely with reference to their fitness to perform the duties of the position to which they may be appointed, and, wherever practicable, shall be natives of the Philippine Islands, and such employees and appointees shall not be subject to the provisions of the Civil Service Act, Numbered Five, and the amendments thereto: *Provided, however*, That the Director of the Census is authorized to call upon the Civil Service Board in cases in which he deems it practicable and useful to certify an eligible list for any position to be filled by appointment in the Bureau, and it shall then be the duty of the Census Service Board to make proper certification as in other cases.

SEC. 16. The enumeration of the population required by this Act shall commence on such date as may be hereafter proclaimed by the Civil Governor, and shall be taken as of that date. The proclamation of the Civil Governor shall also specify general periods within which the schedules shall be returned to the proper supervisor. And it shall be the duty of each enumerator to complete the enumeration of his district and to prepare the schedules and returns hereinbefore required to be made, and cause the same to be delivered to the supervisor of the Census of his district on or before the date which may be designated in said proclamation of the Civil Governor.

SEC. 17. If any person shall receive or secure to himself any fee, reward, or compensation for the appointment, employment, or retention of any person as enumerator or clerk or other employee, he shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not more than one thousand dollars, or be imprisoned not more than one year, or both.

SEC. 18. If any supervisor, supervisor's clerk, enumerator, interpreter, special agent, or other employee, who, having taken and subscribed the oath of office required by this Act, shall, without justifiable cause, neglect or refuse to perform the duties enjoined on him by this Act, or shall, without the authority of the Director of the Census, communicate to any person, not authorized to receive the same, any information gained by him in the performance of his duties, he shall be deemed guilty of a misdemeanor, and upon conviction shall be fined not exceeding five hundred dollars; or if he shall willfully and knowingly swear or affirm falsely, he shall be deemed guilty of perjury, and upon conviction thereof shall be punished accordingly; or if he shall willfully and knowingly make a false certificate, or a fictitious schedule, or other return or report, he shall be guilty of a misdemeanor, and upon conviction of either of the last-named offenses he shall be fined not exceeding two thousand dollars, and be imprisoned not exceeding two years.

SEC. 19. Each and every person more than twenty years of age belonging to any family residing in any enumeration district, and in case of the absence of the heads and other members of any such family, then any representative of such family, shall be, and each of them hereby is, required, if thereto requested by the proper supervisor, or enumerator, or special agent, to render a true account, to the best of his or her knowledge, of every person belonging to such family in the various particulars required, and whoever shall willfully fail or refuse to render such true account shall be guilty of a misdemeanor, and upon conviction thereof shall be fined in a sum not

exceeding one hundred dollars. And every president, treasurer, secretary, director, agent, or other officer of every corporation, and of every establishment of productive industry, or social or religious institution, whether conducted as a corporate body, limited liability company, or by private individuals, or the owner, lessee, agent, or manager of any farm, plantation, or hacienda, from whom answers to any of the schedules, inquiries, or statistical interrogatories, provided for by this Act, are herein required, who shall, if thereto requested by the Director, an Assistant Director, a supervisor, an enumerator, or a special agent, willfully neglect or refuse to give true and complete answers to any inquiries authorized by this Act, or shall willfully give false information, shall be guilty of a misdemeanor, and upon conviction thereof shall be fined not exceeding three thousand dollars, to which may be added imprisonment for a period not exceeding one year. No person shall be required to answer any questions for the Census or shall be punished for willful failure to answer the same under this section if, upon demand, the person asking the same shall not first produce his lawful commission as supervisor, enumerator, or special agent authorizing him to make such inquiries. Any person falsely impersonating a supervisor, enumerator, or special agent, or other Census officer or employee for the purpose of getting access to private premises or eliciting information or any other purpose, shall be fined not exceeding one thousand dollars or imprisoned not more than one year, or both, in the discretion of the court.

SEC. 20. The Director of the Census may authorize the expenditure of the necessary sums for the per diem and traveling expenses of the supervisors, enumerators, and special agents as hereinbefore limited, and also for the per diem and traveling expenses of other officers and employees of the Census to be allowed for the purposes of this Act and the amount thereof to be fixed in the discretion of the Director of the Census.

SEC. 21. All mail matter of whatever class, relative to the Philippine Census and addressed to the Director, Assistant Director, or any supervisor or enumerator of the Census, and indorsed "Official business, Philippine Census," shall be transported free of postage; and all telegrams relative to the Philippine Census sent or received by the officials aforesaid, over all telephone and telegraph lines under public control in the Islands, shall be free of charge; and if any person shall make use of the postal or telegraph franking privileges herein granted, to avoid the payment of postage or telegraph charges on a private message, letter, package, or other matter sent by mail or telegraph, the person so offending shall be guilty of a misdemeanor and subject to a fine of three hundred dollars. The Director of the Census is authorized to employ, in his discretion, couriers, at a compensation to be fixed by him, for the purpose of expeditiously conveying official Census mail of any class to any locality.

SEC. 22. The disbursements in behalf of the Census Bureau in Manila shall be made by a disbursing officer appointed in accordance with the provisions of Act Numbered One hundred and forty-five. The disbursements in each Census district outside the city of Manila shall be made by the provincial treasurer located in that Census district. In each Census district outside of an organized province an officer of the United States Army shall be designated by the Civil Governor, with the consent of the Commanding General of the Division, to act as disbursing officer, and no bond shall be required of such Army officer.

Provincial treasurers and other disbursing officers shall perform their duties in accordance with law and render accounts to the Auditor for the Archipelago in accordance with the provisions of Act Numbered Ninety and its amendments.

Each provincial treasurer who performs the duties of a disbursing officer under the provisions of this Act shall receive from the appropriations for the Census Bureau compensation equal to seven per cent of his annual salary as such treasurer in addition to his salary as provincial treasurer from provincial funds.

SEC. 23. All insular, provincial, and municipal officials, if required, shall render such assistance to the Director, Assistant Directors, supervisors, enumerators, and special agents of the Census as may be practicable and necessary to enable the latter to execute the provisions of this Act.

SEC. 24. The public good requiring the speedy enactment of this bill, the passage of the same is hereby expedited in accordance with section two of "An Act prescribing the order of procedure by the Commission in the enactment of laws," passed September twenty-sixth, nineteen hundred.

SEC. 25. This Act shall take effect on its passage.

Enacted, October 6, 1902.

[No. 486.]

AN ACT To amend Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands."

By authority of the United States, be it enacted by the Philippine Commission, that:

SECTION 1. Section four of Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands," is hereby amended so that it shall read as follows:

"There shall also be in the Census Bureau, to be appointed by the Director thereof, one chief clerk, who shall receive a salary at the rate of two thousand two hundred and fifty dollars per year; three secretaries, each at a salary of one hundred and fifty dollars per month; six clerks, each at a salary of one hundred and thirty-three dollars and thirty-three cents per month; and such number of clerks at a salary of not more than eighty-five dollars per month, to be appointed from time to time, and such number of laborers as may be found necessary for the prompt and proper performance of the duties herein required at wages to be fixed by the head of the Bureau."

SEC. 2. The last paragraph of section eight of said Act shall be amended so as to read as follows:

"Each supervisor shall receive a salary of one hundred and fifty dollars per month, such sum to be in full compensation for all services rendered and expenses incurred by him: *Provided, however,* That when he is traveling under orders, or in serious emergencies arising during the progress of the enumeration in his district, or in connection with the enumeration of any subdivision, he may, in the discretion of the Director of the Census, be allowed the actual cost of transportation and one dollar and a half per day in money of the United States, in lieu of subsistence, during his necessary absence from his place of residence in his district, which sum may be increased by the Director of the Census to three dollars and fifty cents per day whenever the supervisor may be called to Manila for consultation with the Director; he shall also be entitled to one clerk at a salary of sixty dollars per month, and one messenger at a salary of thirty dollars per month: *Provided,* That one-half of the salary due each supervisor shall be withheld and not paid him until after the schedules or other returns and reports required of him shall have been duly rendered to the Director of the Census.

"The governors of provinces and other provincial officers shall be eligible for appointment as supervisors of the census in the provinces, and shall be entitled to receive, in addition to their regular salary as provincial officers, the amount herein provided as compensation for the supervisors."

SEC. 3. Section ten of said Act is hereby amended by providing that each enumerator and special agent shall receive a salary of two dollars per diem in money of the United States, instead of two dollars and fifty cents, as in said section provided, and by adding at the end thereof the following: "Municipal officials, justices of the

peace, and auxiliary justices of the peace shall be eligible for appointment as enumerators or special agents of the census, and when duly appointed may receive the pay herein prescribed for enumerators in addition to their regular salaries or other official compensation while so employed."

SEC. 4. The public good requiring the speedy enactment of this bill, the passage of the same is hereby expedited in accordance with section two of "An Act prescribing the order of procedure by the Commission in the enactment of laws," passed September twenty-sixth, nineteen hundred.

SEC. 5. This act shall take effect on its passage.

Enacted, October 24, 1902.

[No. 507.]

AN ACT Amending Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands."

By authority of the United States, be it enacted by the Philippine Commission, that:

SECTION 1. Section eight of Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands," as amended by Act Numbered Four hundred and eighty-six, is hereby further amended by adding at the close of said section the following:

"Any person in the Insular, provincial, or municipal service of the Government of the Philippine Islands, if otherwise qualified, shall be eligible for appointment as enumerator, special agent, clerk, or messenger, as provided in this Act, and shall be entitled to receive, in addition to his regular salary as Insular, provincial, or municipal officer, the amount herein provided as compensation for enumerator, special agent, clerk, or messenger. In case an Army officer who has been detailed as provincial governor of any province shall be appointed as supervisor of the Census, he shall not receive the compensation provided for in this section, but shall receive a per diem of five dollars from Insular funds, in addition to the per diem received from the province, in lieu of all expenses incurred by him as supervisor, subject to the provisos contained in this section in reference to compensation to supervisors of the Census."

SEC. 2. The public good requiring the speedy enactment of this bill, the passage of the same is hereby expedited in accordance with section two of "An Act prescribing the order of procedure by the Commission in the enactment of laws," passed September twenty-sixth, nineteen hundred.

SEC. 3. This Act shall take effect on its passage.

Enacted, November 10, 1902.

[No. 539.]

AN ACT To amend Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands," as amended by Acts Numbered Four hundred and eighty-six and Five hundred and seven.

By authority of the United States, be it enacted by the Philippine Commission, that:

SECTION 1. Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands," as amended by Acts Numbered Four hundred and eighty-six and Five hundred and seven, is hereby further amended by changing sections twenty-four and twenty-five to read twenty-five and twenty-six, respectively, and by inserting a new section, numbered section twenty-four, which shall read as follows:

"SEC. 24. The city of Manila shall be one supervisor's district. If the supervisor of Manila when appointed shall fill another civil office, then his compensation shall

be the same as that of the other supervisors appointed under this Act. If, however, he shall not hold any civil office, then his compensation shall be three hundred dollars per month, such sum to be in full compensation for all services rendered and expenses incurred by him: *Provided, however,* That in the discretion of the Director of the Census he may be allowed a reasonable sum for the rent of his necessary offices and for the actual cost of transportation needed in the discharge of his duties in the city of Manila. He shall also be entitled to one clerk at a salary of one hundred dollars per month, and one messenger at a salary of thirty dollars per month; and the proviso that one-half of the salary due each supervisor shall be withheld and not paid him until after the schedules or other returns and reports required of him shall have been duly rendered to the Director of the Census, shall be applicable to the supervisor of Manila. Members of the civil service, whether of the Insular Government or of the city government of Manila, shall be eligible for appointment as supervisor of the city of Manila, and shall be entitled to receive, in addition to their regular salary as such civil officers, the amount provided as compensation for supervisors of the census."

SEC. 2. The public good requiring the speedy enactment of this bill, the passage of the same is hereby expedited in accordance with section two of "An Act prescribing the order of procedure by the Commission in the enactment of laws," passed September twenty-sixth, nineteen hundred.

SEC. 3. This Act shall take effect on its passage.

Enacted, November 28, 1902.

[No. 673.]

AN ACT Authorizing the nomination to the Director of the Census of certain enumerators and special agents of the census, the provisions of paragraph two of section eight of Act Numbered Four hundred and sixty-seven to the contrary notwithstanding.

By authority of the United States, be it enacted by the Philippine Commission, that:

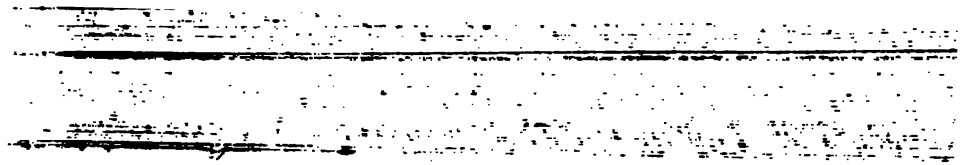
SECTION 1. The supervisor of the census for the district comprised in the Province of Bohol is hereby authorized and empowered to nominate to the Director of the Census, Gerarda Clarin, Andrea Clarin, Ramos Clarin, Froilán Gallardo, Cirilo Clarin, Proceso Clarin, Santiago Butalid, Andrés Lumain, Pedro Lumain, Claudio Butalid, Fortunato Butalid, Macario Lumain, Luis Butalid, Protasio Clarin, Severino Clarin, Osidio Gallardo, Gaudencio Mendoza, Esteban Lumain, Nicolás Butalid, and Simeon Clarin as enumerators and special agents of the census within his district, regardless of the relationship, by affinity or consanguinity, of said persons to him, the provisions of paragraph two of section eight of Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands," to the contrary notwithstanding.

SEC. 2. The supervisor of the census for the district comprised in the Province of Misamis is hereby authorized and empowered to nominate to the Director of the Census, Pedro Roa, Pedro Valez, and Pío Roa as enumerators and special agents of the census within his district, regardless of the relationship, by affinity or consanguinity, of said persons to him, the provisions of paragraph two of section eight of Act Numbered Four hundred and sixty-seven, entitled "An Act to provide for taking a census of the Philippine Islands," to the contrary notwithstanding.

SEC. 3. The public good requiring the speedy enactment of this bill, the passage of the same is hereby expedited in accordance with section two of "An Act prescribing the order of procedure by the Commission in the enactment of laws," passed September twenty-sixth, nineteen hundred.

SEC. 4. This Act shall take effect on its passage.

Enacted, March 9, 1903.



APPENDIX II.

ORGANIZATION OF THE PHILIPPINE CENSUS.[1]

DIRECTOR.

Maj. Gen. J. P. SANGER, U. S. Army, Retired.
First Lieut. T. B. TAYLOR, Eleventh U. S. Cavalry, aid-de-camp.

ASSISTANT DIRECTORS.

HENRY GANNETT.
VICTOR H. OLMSTED.

SECRETARIES.

A. H. WHELPLEY.
NATHAN GAMMON.
SIDNEY C. SCHWARTZKOPF.
EUGENE A. SWITZER.

CHIEF CLERKS.

ALFRED E. WOOD, from November 1, 1902, to December 9, 1902.
J. C. CRENSHAW, from December 9, 1902, to February 25, 1903.
LOUIS M. LANG, from February 25, 1903, to March 31, 1904.

DISBURSING OFFICERS.

NATHAN GAMMON, from November 1, 1902, to December 20, 1902.
LOUIS M. LANG, from December 20, 1902, to March 31, 1904.[2]

AMERICAN CLERKS IN OFFICE OF DIRECTOR.

Between November 1, 1902, and September 1, 1903.

Capt. J. Y. M. Blunt.	Albert J. Brazee.	T. A. Sanderson.
William Dinwiddie.	Frank P. Cook.	Edgar T. Bogle.
Nicholas W. Campanole.	J. K. Barrett.	Harry C. Flora.
Sidney C. Schwartzkopf.	S. B. Trissel.	J. C. Crenshaw.
Norman W. McAllen.	Paul V. Halley.	

SPECIAL AGENTS.

Dr. David P. Barrows, for non-Christian tribes.
Mr. A. J. Brazee, in charge of banking schedules.
Mr. Alberto Barreto, land statistics, Bilibid prison, and mortuary statistics.
Mr. L. E. Bennett, reenumeration wild tribes, province of Isabela.
Mr. N. L. Miller, reenumeration wild tribes, province of Surigao.
Mr. Will A. Reed, reenumeration wild tribes, province of Negros Occidental.
José Calata, Joaquín Velasquez, Hilario Logaso, reenumeration wild tribes, province of Isabela.

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[1] In the Spanish edition the names of all the special agents, special enumerators, and enumerators are given.—*Director.*

[2] Also disbursing officer of supervisor's district No. 18 and of military districts.

NATIVE CLERKS.

C. B. Troplong.
Agustín Chofie.
Vicente Estrella.
Ramju Sadick.
Joaquín Balmori.
Constancia Poblete.
Tomás Barreto.
Valentina del Rosario.
José M. Paterno.
Santiago A. de Basterrechea.
Mariana Warren.
Potenciano Sabas.
Manuela López Palma.
Francisco Paterno.
Juan Elveña.
Márcos Ventus.
Roberto Santos.
Felipe Juan.
Severo Guerrero.
Benito Laureano.
Martín G. Fermín.
Manuel Natividad.
Lino Scarello.
Eduardo Bernardo.
Godofredo Dancel.
Juan Mauricio.
Mariano Asunción.
Luis Cucullu.
Teodorico Angeles.
Eduardo Torres.
Benito Barahona.
José Flor Mata.
Simplicio Changco.
José R. Flores.
Eulogio Mendoza.
Manuel Morillo.
Trinidad Carrios.
Francisco Zuñiga.
Manuel Linchoco.
Luis Bernardo.
Federico Segovia.
Paciano Puentebella.
Dalmacio Gerónimo.
Marcelino Bustos.
Nicolás de León.
Benigno Coronel.
Luis Moreno.
Gerónimo Panis.
Manuel Miguel.
Esperanza Maniquiz.
José Reyes.
Manuel Espinosa.
Inocencio Quintanilla.
Francisco Bautista.
Tomás Lindianquin.
Benito Dujua.
Arcadio Diaz.
Horacio Gonzalez Liquete.
Paz Bulalio.
José Gomez de Arce.
Juan C. de Vega.
Benigno Mariño.
Ramón Sityar.
Cirilo Gutierrez.
José Reyes Santa María.
Perpetuo Romero.

MESSENGERS AND LABORERS.

Marcelo Reyes.
Leandro Albano.
Hilario Sanchez.
Domingo Estanislao.
Manuel Linchoco.
Antonio M. Paterno.

OFFICERS OF THE SUPERVISORS' DISTRICTS.

SUPERVISOR'S DISTRICT NO. 1.

PROVINCE OF ILOCOS NORTE.

Supervisor,
Gov. Julio Agcaoili.

Disbursing officer,
J. M. Currie, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 2.

PROVINCE OF CAGAYÁN.

Supervisor,
Gov. Gracio Gonzaga.

Disbursing officer,
W. W. Barclay, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 3.

PROVINCE OF ILOCOS SUR.

Supervisor,
Gov. Mena Crisologo.

Disbursing officer,
George R. Grau, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 4.

PROVINCE OF ABRA.

Supervisor,
Gov. Juan Villamor.

Disbursing officer,
B. T. Reamy, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 5.

PROVINCE OF LEPANTO-BONTOC.

Supervisor,
Gov. William Dinwiddie.

Disbursing officer,
Bernard Lichtig, provincial secretary-treasurer.

SUPERVISOR'S DISTRICT NO. 6.

PROVINCE OF ISABELA.

Supervisor,
Gov. Francisco Dichoso.

Disbursing officer,
N. B. Stewart, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 7.

PROVINCE OF LA UNIÓN.

Supervisor,
Gov. J. Ortega.

Disbursing officer,
Dean Tompkins, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 8.

PROVINCE OF BENGUET.

Supervisor,
Gov. Wm. F. Pack.

Disbursing officer,
P. S. Wagar, provincial secretary.

SUPERVISOR'S DISTRICT NO. 9.

PROVINCE OF NUEVA VIZCAYA.

Supervisor,
Gov. Laurence E. Bennett.

Disbursing officer,
R. H. Morley, provincial secretary-treasurer.

SUPERVISOR'S DISTRICT NO. 10.

PROVINCE OF ZAMBALES.

Supervisor,
Gov. Potenciano Lesaca.

Disbursing officer,
Arthur S. Emery, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 11.

PROVINCE OF PANGASINÁN.

Supervisor,
Gov. Macario Fávila.

Disbursing officer,
Thomas Hardeman, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 12.

PROVINCE OF NUEVA ÉCIJA.

Supervisor,
Gov. E. de los Santos.

Disbursing officer,
H. H. Cheal, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 13.

PROVINCE OF TÁRLAC.

Supervisor,
Gov. Alfonso Ramos.

Disbursing officer,
W. E. Jones, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 14.

PROVINCE OF PAMPANGA.

Supervisor,
Gov. Ceferino Joven.

Disbursing officer,
R. M. Shearer, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 15.

PROVINCE OF BULACÁN.

Supervisor,
Gov. Pablo Tecson Ocampo.

Disbursing officer,
R. W. Goodheart, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 16.

PROVINCE OF BATAÁN.

Supervisor,
Gov. John H. Goldman.

Disbursing officer,
H. K. Love, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 17.

PROVINCE OF RIZAL.

Supervisor,
Gov. Arturo Dancel.

Disbursing officer,
G. R. Grau, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 18.

CITY OF MANILA.

Supervisor,
Maximino Paterno.

Clerk,
José Hernandez.

SUPERVISOR'S DISTRICT NO. 19.

PROVINCE OF CAVITE.

Supervisor and disbursing officer,
P. M. Moir, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 20.

PROVINCE OF LA LAGUNA.

Supervisor,
Gov. Juan Cailles.

Disbursing officer,
W. J. Vaughan, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 21.

PROVINCE OF BATANGAS.

Supervisor,
Gov. Simeon Luz.

Disbursing officer,
R. D. Blanchard, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 22.

PROVINCE OF TAYABAS.

Supervisor,
Gov. H. H. Bandholtz, captain, Second U. S. Infantry.

Disbursing officer,
Chas. C. McLain, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 23.

PROVINCE OF AMBOS CAMARINES.

Supervisor,
Gov. James Ross.

Disbursing officer,
J. Q. A. Braden, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 24.

PROVINCE OF ALBAY.

Supervisor,
Gov. Arlington U. Betts.

Disbursing officer,
C. A. Reynolds, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 25.

PROVINCE OF SORSOGÓN.

Supervisor,
Gov. Bernardino Monreal.

Disbursing officer,
R. J. Fanning, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 26.

PROVINCE OF MINDORO.

Supervisor,
Gov. Robert S. Offley, captain, Thirtieth U. S. Infantry.

Disbursing officer,
Carroll H. Lamb, provincial supervisor-treasurer.

SUPERVISOR'S DISTRICT NO. 27.

ISLAND OF MARINDUQUE.
(Part of province of Tayabas.)

Supervisor,
Gov. Ricardo Paras.

Disbursing officer,
Chas. C. McLain, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 28.

PROVINCE OF ROMBLÓN.

Supervisor,
Gov. Francisco Sanz.

Disbursing officer,
Julius A. Comdohr, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 29.

PROVINCE OF MASBATE.

Supervisor,
Gov. Bonifacio Serrano.

Disbursing officer,
J. W. Hunter, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 30.

PROVINCE OF SÁMAR.

Supervisor,
Gov. Julio Llorente.

Disbursing officer,
F. A. Casanave, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 31.

PROVINCE OF LEYTE.

Supervisor,
Gov. Peter Borseth.

Disbursing officer,
W. S. Conrow, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 32.

PROVINCE OF BOHOL.

Supervisor,
Gov. Aniceto Clarin.

Disbursing officer,
C. D. Upington, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 33.

PROVINCE OF CEBÚ.

Supervisor,
Gov. Juan Climaco.

Disbursing officer,
Fred J. Schlotfeldt, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 34.

PROVINCE OF NEGROS ORIENTAL.

Supervisor,
Gov. Demetrio Larena.

Disbursing officer,
H. A. Peed, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 35.

PROVINCE OF NEGROS OCCIDENTAL.

Supervisor,
Gov. Leandro Locsin.

Disbursing officer,
[illegible]. G. Hollis, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 36.

PROVINCE OF ILOILO.

Supervisor,
Gov. Martin Delgado.

Disbursing officer,
F. A. Thompson, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 37.

PROVINCE OF CÁPIZ.

Supervisor,
Gov. S. Hugo Vidal.

Disbursing officer,
W. O. Thornton, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 38.

PROVINCE OF ANTIQUE.

Supervisor,
Gov. Leandro Fullon.

Disbursing officer,
F. L. Wilson, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 39.

PROVINCE OF PARAGUA.

Supervisor,
Gov. William A. Phillips, captain, Tenth U. S. Infantry.

Disbursing officer,
Lieut. E. Y. Miller, Twenty-ninth U. S. Infantry, provincial secretary-treasurer.

SUPERVISOR'S DISTRICT NO. 40.

THAT PART OF THE ISLAND OF PARAGUA AND ADJACENT ISLANDS NOT IN THE PROVINCE OF PARAGUA.

Supervisor, special enumerator, and disbursing officer,
Maj. L. A. Lovering, Twenty-ninth U. S. Infantry.

SUPERVISOR'S DISTRICT NO. 41.

PROVINCE OF SURIGAO.

Supervisor,
Gov. Hermenegildo Narciso.

Disbursing officer,
L. S. Kelly, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 42.

PROVINCE OF MISAMIS.

Supervisor,
Gov. Manuel Corrales.

Disbursing officer,
E. Barton, provincial treasurer.

SUPERVISOR'S DISTRICT NO. 43.

THE MOROS OF MISAMIS PROVINCE NORTH OF THE CROSSING OF THE RIVER AGUS.

Supervisor, special enumerator, and disbursing officer,
Maj. L. W. V. Kennon, Tenth U. S. Infantry.

SUPERVISOR'S DISTRICT NO. 44.

MILITARY DISTRICT OF DAPITAN.

Supervisor and disbursing officer,
First Lieut. Samuel Willits, Philippine Scouts.

SUPERVISOR'S DISTRICT NO. 45.

MILITARY DISTRICT OF ZAMBOANGA.

Supervisor and disbursing officer,
Capt. C. J. T. Clarke, Tenth U. S. Infantry.

SUPERVISOR'S DISTRICT NO. 46.

THAT PART OF THE COMANDANCIA OF COTTABATO SOUTH OF THE FIFTY-FOURTH CENSUS DISTRICT (CAPTAIN PERSHING) AND WEST OF PARANG PARANG TO THE ZAMBOANGA LINE AND INCLUDING ALL ISLANDS ADJACENT TO THE COAST.

Supervisor and disbursing officer,
Lieut. Col. S. R. Whitall, Twenty-seventh U. S. Infantry.

SUPERVISOR'S DISTRICT NO. 47.

THAT PART OF THE COMANDANCIA OF COTTABATO EAST OF THE BUTIG MOUNTAINS, INCLUDING PARANG PARANG, THE VALLEY OF THE RÍO GRANDE DE MINDANAO, AND ALL THE ISLANDS ADJACENT TO THAT PART OF THE COAST.

Supervisor,
Lieut. Col. R. W. Hoyt, Fourteenth U. S. Infantry, from November 20, 1902, to February 20, 1903.

Supervisor and special enumerator,
Capt. James Baylies, Tenth U. S. Infantry, from February 20, 1903.

Disbursing officer,
Second Lieut. Walter L. Reed, Tenth U. S. Infantry.

SUPERVISOR'S DISTRICT NO. 48.

THAT PART OF THE MILITARY DISTRICT OF DÁVAO NORTH AND EAST OF THE GULF OF DÁVAO, WEST BETWEEN THE GULF AND THE COMANDANCIA OF COTTABATO TO THE MALAYLAY RIVER, AND THENCE BETWEEN THE MONITOM RANGE AND THE GULF, INCLUDING SÁMAL, SARANGANI, AND BALUT ISLANDS.

Supervisor,
Maj. M. W. Day, Ninth U. S. Cavalry.

Disbursing officer,
First Lieut. R. C. Hunter, Philippine Scouts.

SUPERVISOR'S DISTRICT NO. 49.

BOTH SIDES OF SARANGANI BAY AND ALL OF DÁVAO PROVINCE WEST OF THE DIVIDE BETWEEN SARANGANI BAY AND DÁVAO GULF.

Supervisor, special enumerator, and disbursing officer,
Second Lieut. H. Rodgers, Philippine Scouts.

SUPERVISOR'S DISTRICT NO. 50.

MILITARY DISTRICT OF BASILAN.

Supervisor, special enumerator, and disbursing officer,
Capt. J. E. Mahoney, U. S. Marine Corps.

SUPERVISOR'S DISTRICT NO. 51.

MILITARY DISTRICT OF JOLÓ.

Supervisor and disbursing officer,
Col. W. M. Wallace, Fifteenth U. S. Cavalry.

SUPERVISOR'S DISTRICT NO. 52.

MILITARY DISTRICT OF SIASSI.

Supervisor, special enumerator, and disbursing officer,
Capt. Howard R. Hickok, Fifteenth U. S. Cavalry.

SUPERVISOR'S DISTRICT NO. 53.

MILITARY DISTRICT OF TAWI TAWI.

Supervisor, special enumerator, and disbursing officer,
Capt. K. W. Walker, Fifteenth U. S. Cavalry.

SUPERVISOR'S DISTRICT NO. 54.

THAT PART OF MINDANAO BETWEEN THE CROSSING OF THE AGUS RIVER IN THE PROVINCE OF MISAMIS TO AN EAST AND WEST LINE THROUGH MATALING FALLS, THE EAST END TERMINATING AT THE BUTIG MOUNTAINS, AND THE WEST END AT THE GENASSI TRAIL, AND EMBRACING ALL MOROS IN THAT AREA AND ABOUT LAKES LANAO AND DAPAO.

Supervisor, special enumerator, and disbursing officer,
Capt. John J. Pershing, Fifteenth U. S. Cavalry.

NOTE.—The total number of persons employed in the Census was 7,627, of whom 118 were Americans; 7,462 native men and 40 native women; 1 Japanese; and 6 Chinese.

APPENDIX III.

BIBLIOGRAPHY.

Alcubilla. Diccionario de la administración española. Madrid, 1892.

Algué, José. Atlas of the Philippine Islands. Washington, 1900.

Baguíos ó tifones de 1894–95. Manila, 1895.

El baguío de Sámar y Leyte, 1897. Manila, 1898.

Almanaque Filipino i Guía de Forasteros. Manila, 1834.

Alvarez y Tejero, Luis Prudencio. De las Islas Filipinas. Valencia, 1842.

Archipiélago Filipino, El, by some Jesuit fathers in the Philippine Islands. Washington, 1900.

Atkinson, Edward. The Cost of a National Crime. 1899. (S. Doc., No. 82, 55th Cong., 3d sess.)

Autos acordados de la Real audiencia chancilleria de Filipinas. Manila, 1861–1866, 5 vols.

Azcárraga y Palermo, Manuel de. La Libertad de Comercio en las Islas Filipinas. Madrid, 1871.

Balanza General del Comercio de las Islas Filipinas, 1854.

Balanza Mercantil de las Islas Filipinas, 1857–58; 1860–1865.

Balanza Mercantil de las Rentas de Aduanas, 1855.

Baldwin, James. Our New Possessions. New York, 1899.

Baranera, Francisco X. Handbook of the Philippine Islands. Manila, 1899.

Barrows, David J., Chief of Bureau. The Bureau of non-Christian Tribes for the Philippine Islands, 1901.

Becker, George F. Brief memorandum on the geology of the Philippine Islands, 1898–99. Washington, 1900.

Memorandum on the mineral resources of the Philippine Islands. Washington, 1898.

Preliminary report on the geological and mineral resources of the Philippines. Washington, 1899.

Blair and Robertson, editors. The Philippine Islands, 1493 to 1803. Cleveland, 1903.

Blumentritt, Ferdinand. Dr. José Rizal. 1897.

List of the native tribes of the Philippines and of the languages spoken by them; Smithsonian Report, 1899.

Philippines, the: A summary account of their ethnographical, historical, and political conditions. Chicago, 1900.

Bonsal, Stephen, editor. The Golden Horseshoe. New York, 1900. (Being extracts from letters of Captain Herndon and Lieut. Lawrence Gill.)

Borrero, Francisco. Cuestiones Filipinas. Madrid, 1896.

Bowring, Sir John. A Visit to the Philippines. London, 1859.

Browne, G. Waldo. The Pearl of the Orient—the Philippine Islands. Boston, 1900.

Bureau of Education. Reports.

Bureau of Insular Affairs, U. S. War Department.
Gazetteer of the Philippine Islands. Washington, 1902.
Map of the Philippine Islands.
Commerce of the Philippine Islands, monthly summaries, 1900–1903.
Reports, 1902–1904.
Cabezas de Herrera, José. Apuntes históricos sobre la organización político administrativa de Filipinas. Manila, 1883.
Calendario Manual y Guía de Forasteros de las Islas Filipinas, 1840.
Chaffee, Maj. Gen. A. R., Commanding Division of the Philippine Islands. Annual Reports for 1901–2.
Charts of the Philippine Islands—American, English, Spanish.
Church Records of Marriages, Births, and Deaths.
Coast and Geodetic Survey. Atlas of the Philippine Islands. Washington, 1900.
Philippine Islands Sailing Directions.
Colección de las Reales Cédulas, Decretos y Ordenes de su Magestad Don Fernando VII desde 4 Mayo de 1814. Barcelona.
Colección de los decretos y ordenes que han expedido las Cortes de 24 Septiembre, 1810–1814; Febrero, 1822. Madrid.
Colección legislativa de España, Legislación y disposiciones de la Administración central.
Coleman, Ambrose. The Friars in the Philippines. Boston, 1899.
Committee on the Philippines, 57th Congress, Hearings before, Washington, 1902. S. Doc., No. 331.
Comyn, Tomás de. State of the Philippine Islands. London, 1821.
Conant, Charles A. Coinage and Banking in the Philippine Islands—special report made to the Secretary of War. (Annual Report of Secretary of War, Washington, 1901.)
Constitución Política de la Republica Filipina, promulgada el dia 22 de Enero de 1899. (In The Philippine Islands.)
Reprint of same.
Cuadro General del Comercio Exterior de Filipinas, 1856.
Daily Manila American, 1900–1903.
Daily Manila Freedom, 1900–1903.
Davis, Maj. Gen. George W., Commanding Division of the Philippine Islands. Annual Reports for 1901–2.
Decreto sobre el vestuario del ejercito filipino aprobado en 25 de Noviembre de 1898 por decreto presidencial. (In The Philippine Islands.)
Decretos del Rey Fernando VII, 1814–1833. Madrid, 1816–1834, 18 vols.
Department of Labor of the United States. Prices of commodities and rates of wages in Manila. (Bulletin 32, 1901.)
Diaz Arenas, Rafael. Memoria sobre el comercio y navegación de las Islas Filipinas. Cadiz, 1838.
Division of the Philippines. All general orders and circulars published by the Military Governor and Commanding General. 1898–1904.
Echauz, E. Apuntes de la Isla de Negros. Manila, 1894.
Edwards, Col. Clarence R., U. S. A. Currency and Exchange in the Philippines. Washington, 1900. (H. Doc., No. 160.)
Engineer Corps, U. S. A. Map sheets of the Philippine Islands.
Estadística general del comercio exterior de las Islas Filipinas, 1881–1894.
Estadística mercantil del comercio exterior de las Islas Filipinas, 1866–67, 1873–1880.
Fabie, Antonio Maria. Ensayo histórico de la legislación española en sus estados de ultramar. Madrid, 1896.
Featherman, A. Social History of the Races of Mankind. London, 1888.

Foreign Office, Great Britain. Sessional Papers, 1887, Vol. 82. Report on the native manufacturers of the Philippine Islands.
Sessional Papers, 1890-91, Vol. 84. Report on hemp cultivation in the Philippine Islands.
Foreman, John. The Philippine Islands. New York, 1899.
Forestry Bureau. Reports.
Gobierno revolucionario 1898. Decreto del Gobierno revolucionario sobre las provincias reconquistadas para su nuevo régimen. (In The Philippine Islands.)
Guía de Forasteros en las Islas Filipinas, 1842-1865.
Guía oficial de Filipinas, 1835-1885; 1879; 1885-86; 1890-1897.
Gutiérrez Creps, Francisco. Memoria sobre el cultivo, beneficio y comercio del azúcar, Manila, 1878.
Halstead, Murat. Aguinaldo and his Captor. Cincinnati, 1901.
The Story of the Philippines. Chicago, 1898.
Handbook of Java.
Hitchcock, Frank H., Chief of Section of Foreign Markets, U. S. Department of Agriculture. Bulletin 14, Trade of the Philippine Islands. Washington, 1898.
Jägor, Feodor. Travels in the Philippines. London, 1875.
Kidd, Benjamin. The Control of the Tropics. New York, 1898.
Kneeland, Samuel. The Philippine Islands, their physical characteristics, etc., in volume 15, Journal of the American Geographical Society, 1883.
Lodge, Henry Cabot. The War with Spain. New York and London, 1900.
MacArthur, Maj. Gen. Arthur, Military Governor of the Philippine Islands. Annual Reports for 1899, 1900, 1901.
McKinley, William. Proclamations and Executive orders relating to the Spanish-American War.
MacMicking, Robert. Recollections of Manila and the Philippines during 1848, 1849, and 1850. London, 1851.
Mallat, Jean. Les Philippines. Paris, 1846.
Marin, P. Ensayo por las Corporaciones, Religiosas de Filipinas. 2 vols.
Martin, K. Report on the Geology of the Philippine Islands, followed by a version of Ueber Tertiare Fossilien von den Philippinen, 1895. Washington, 1901. (H. Doc., No. 5, 56th Cong., 2d sess.)
Martinez de Zuñiga, Josquín. State of the Philippine Islands. Madrid, 1893.
A historical view of the Philippine Islands. London, 1814.
Mason Company, P. In the Philippines (unbound). Boston, 1900.
Merritt, Maj. Gen. Wesley J., Military Governor of the Philippine Islands. Annual Report for 1898.
Messages from the President of the United States, March 5, 1900; March 27, 1900; April 18, 1900; May 15, 1900; June 6, 1900.
Communications between the Executive Departments of the Government and Aguinaldo, etc.
Message transmitting copy of an order to the provost-marshal-general of Manila, relative to the liquor traffic in Manila, May 12, 1900.
Military Information Office. Map of the Philippine Islands.
Montero y Vidal, José. The Philippine archipelago and the Marianas and Caroline islands. Madrid, 1886.
Morga, Antonio de. The Philippine Islands, Moluccas, Siam, Cambodia, Japan, and China, at the close of the sixteenth century. London, 1868.
Novísima Recopilación de las leyes de España (Carlos IV). Madrid, 1805, 5 vols.
Obligaciones del soldado del Gobierno de Filipinas, Reimpreso. (In The Philippine Islands.)

Ordenanzas del Consejo Real de las Indias. Madrid, 1681 and 1747.
Otis, Maj. Gen. E. S. Reports on Military Operations and Civil Affairs in the Philippine Islands, 1899.
Packard, Robert L. Education in Cuba, Porto Rico, and the Philippines, 1899.
Paterno, Pedro A. El régimen municipal en las Islas Filipinas. Madrid, 1893.
People of the Philippines, The. By the Chief of the Bureau of Insular Affairs, Washington, 1901 (56th Cong., 2d sess., S. Doc., No. 218).
Philippine Board of Health. Monthly Reports.
Philippine Commission. Public laws and resolutions.
Reports, 1901–1903.
Philippine Mining Bureau. Bulletins.
Pigafetta, Francisco Antonio, and others. The First Voyage Around the World by Magellan. London, 1874.
Plehn, Carl C. Taxation in the Philippines. Political science quarterly, December, 1901, and March, 1902.
Recopilación de leyes de los Reinos de las Indias, del Rey Don Carlos II. Madrid, 1841, 4 vols.
Reglamento del decreto del Sr. Aguinaldo de 18 de Junio y las instrucciones sobre el régimen de las provincias y pueblos. (In The Philippine Islands.)
Reports:
Census of Cuba.
Census of Porto Rico.
Census of Spain, 1887.
Twelfth Census of the United States.
Reyes Lala, Ramon. The Philippine Islands.
Rodriguez Berriz, Miguel. Diccionario de la administración de Filipinas. Manila, 1887.
Rodriguez San Pedro, Joaquín. Legislación ultramarina. Madrid, 1865–1869.
Roosevelt, Theodore. The First Civil Governor: William H. Taft. (In The Philippines, pages 9–28. New York, 1902.)
Saderra Masó, Miguel. La seismologia en Filipinas. Manila, 1895.
San Augustin, Gaspar de. Conquistas de las Islas Filipinas. Madrid, 1698.
Santayana, Bustillo. Gobierno político de los pueblos de España, y el Corregidor, Alcalde y Juez en ellos. Madrid, 1769.
Sawyer, Frederick H. The Inhabitants of the Philippines. London, 1900.
Schurman, Jacob Gould. Philippine Affairs: A retrospect and outlook. New York, 1902.
Schurman Philippine Commission. Reports, 1900.
Secretary of the Interior. Report to the Philippine Commission, 1902.
Statesman's Yearbook.
Taft, Hon. William H., Secretary of War and Governor of the Philippines. Civil Government in the Philippines. New York, 1902.
Address before the Union Reading College, Manila, December 17, 1903.
Address before the Chamber of Commerce, New York, April 21, 1904.
Address before the Harvard College Alumni Association, June 28, 1904.
Address before the Chautauqua Society, August 11, 1904.
Address at Montpelier, Vt., August 26, 1904.
American Education in the Philippines. The Churchman, October 1, 1904.
Taft Philippine Commission. Reports from 1900–1904.
Taylor, W. A. The Philippine Islands. (Scottish Geographic Magazine, Vol. 5, pages 81–90. Edinburgh, 1889.)

Treaty between the United States and Spain: Report from the Secretary of State relating to treaty signed at Washington, November 7, 1900. (S. Doc., No. 124, 56th Cong.)

United Kingdom. Statistical Handbook.

United States. Congressional Documents.

Consular Reports.

Wallace, Alfred Russel. The Geographical Distribution of Animals. London, 1876.

Walsh, George E. The Weavers of the Philippines, in volume 74 of "The Catholic World." March, 1902.

Worcester, Dean C. The Philippine Islands and their People. New York, 1898.

Younghusband, George John. The Philippines and Round About. New York, 1899.

INDEX.

Abatán, river, location and navigable length of, 67.
Abella, writer, volcanic nature of archipelago noted by, 186; mineral springs described by, 193; Mayón and surrounding cones described by, 222-226; volcanic disturbance of Pangasinán, Benguet, and Nueva Vizcaya described by, 241-244.
Aborigines, firearms made by, 326; system of writing employed by, 327, 328; religion of, 328; dress of, 328, 329; commerce of, 329, 330; manners and customs of, 329; language of, 448; tribe of the Philippines believed to be, 454, 532.
Abra, province, earthquakes of, 245; tobacco cultivation in, 358; Igorot population of, 513; Tinguianes in, 513; Ilocanos in, 513; description of inhabitants of, 513; average size of families in, 514 (*note*).
Abra, river, size of, 56; description of, 64.
Aburlin, tribe, 468.
Acapulco, commercial relations of, with Manila, 318, 350, 352, 355, 484.
Act of Congress, census of Philippine Islands ordered by, 11, 587-595; rights guaranteed to Filipinos by, 339; purchase of friar lands authorized by, 346; sovereignty of United States established by, 370.
Acuña, Governor, expulsion of Dutch from Molucca Islands by, 316.
Aetas, tribe, 468.
Agno, river, length of, 56; source and direction of, 62, 64; population of valley of, 437.
Agótay, mountain, location and height of, 69.
Agriculture, undeveloped wealth of islands, 40; causes of loss of interest in, 357; encouragement of interest in, 355, 356, 432.
Agtá, tribe, 469.
Aguinaldo, Emilio, insurrection against Spain led by, 324, 385, 386; treaty of peace arranged with, 385, 386; capture of, 430.
Agusan, river, length of, 56; location of, 70; description of, 71; seismic center of, 204.
Ájuy, river, navigable length of, 70.
Alamit, tribe, 469.
Albay, province, winds of, 145; volcanic region of, 193, 221, 227; population of, 439.
Albay, town, location of, 63.
Alburquerque, Father, volcanic eruptions described by, 230.
Alcaldes mayores, qualifications for, 401.
Alexander VI, Pope, arbiter between Spain and Portugal, 309.
Alfaro, Father Pedro de, 428.
Algué, Rev. Father José, S. J., director of Weather Bureau, 30; contributions to census statistics by, 36; article on climate of the Philippines by, 87-183; *The Cyclones of the Far East* by, 199; atlas of the Philippines prepared by, 467.
Alphabet, national, 327.
Altitude, climate as affected by, 88.
Ambos Camarines, province, population of, 422, 431, 439; industries of, 439; description of natives of, 494, 523, 524.
Amendments to act of Congress providing for taking of Philippine Census, 593-595.
America, trade with, 427.
American school system, 41.
Amoy, Chinese port, opening of, to Spanish trade, 482.
Ancestors, worship of, by aborigines, 328.
Anda, Governor, friars' abuse of power, corrected by, 344.
Anilao, river, navigable length of, 70.
Anson, Admiral, capture of Spanish nao by, 351, 352.
Antelope, buffalo, or timarau, number of, 73.
Antique, province, location and description of, 69; ancient fortifications of, 321; population of, 441.
Aparri, meteorological station, frequency of winds at, 145.
Apayaos, tribe, 469.
Apo, volcano, description of, 71, 185, 200-204; ascent of, by different explorers, 202.
Appeal, right of, defined, 392.
Arabs, influence of, 412.
Arandia, Governor, expulsion of Chinese by, 319, 320.
Aráyat, volcano, location and description of, 62, 189, 228, 239; relative position of, to Manila, 247.
Archipelago, Asiatic, points of contact with Philippines, 184.
Archipelago, Philippine. *See* Philippine Islands.
Archivo del Bibliófilo Filipino, character of defined, 420; extracts from, 424, 427.
Area of islands, 52, 57.
Arellano, Señor, reference to article written by, 389 (*note*); chief justice of the Philippines, 409; convent and mission center founded by, 428.
Arévalo, town, founding of, 314.
Aritao, town, founding of, 449.
Army of the King, standing, 480.
Army, United States, military control of Philippines by, 372, 387, 388; conquest of Moros by, 466.
Asphalt, occurrence of, 79.
Assistant directors of Philippine Census, 597.
Ata, tribe, 469.
Atmosphere, movements of, 128-183; movements in Manila, given in table, 149.
Audiencia, definition, description, and jurisdiction of, 391-400; reconstituting of, under name of Supreme Court of the Philippine Islands, 408.
Auditor audiencia, office defined, 391 (*note*); duties of, 392-394.
Augustin, General, governor of Philippines (1898), 386.
Augustinians, chronicles of, 244; early work of, 315; educational work of, 334; number of in 1898, 346 (*note*); missions of, 449.
Autos acordados, defined, 397.
Ayangan, tribe, 469.

Babaylanes, Visayan priestesses, 441.
Babuyán Claro, island, volcanoes on, 246.
Babuyán, islands, volcanic cones in, 189; population of, 421; character of inhabitants of, 448; Morga's account of, 448.
Babylanes, tribe of, 460, 470.
Bacón. *See* Pocdol.
Bacoor, seat of provisional government organized by Aguinaldo, 387.
Bagábag, town, establishment of, 449.
Bagobo, tribe, where found, 462, 469; description of, 561.
Baguió, pueblo, climatic elements in, 183.
Baguios, systematic study of, 29, 153; monthly and yearly distribution of, 156; relative distance from Manila, 157; climatic phenomena explained by nearness of, 157; frequency of, 157; in Luzón and Panay, 158; months of occurrence of, 158; classification of, 158, 162, 175; description of, 158-160; distribution of, 161; trajectories of, 175; explanation of, 175.
Bahú, mountain, location and height of, 73.
Bajaus, tribe, classification of, 561. *See also* Sámal Laut, 471.

Balábac, island, location of, 50; ancient fortifications of, 321.
Balanguingui, island, 465.
Balanon, river, navigable length of, 69.
Balantoc, crater, location and description of, 228.
Balasian, river, navigable length of, 70.
Baler, town, population of, 423; capture of Americans at, 430; mission at, 437.
Balugas, tribe, 469.
Balusan, river, navigable length of, 69.
Bambán, municipality, population of, 436.
Bambang, town, founding of, 449.
Bamboo, houses built of, 59.
Banájao, volcano, 189; location and description of, 228, 239, 247, 250.
Banao, tribe, 469.
Banaran, island, 464.
Banato, river, navigable length of, 70.
Bañgon, tribe, 469.
Bank, Spanish, establishment of, 357; capital stock of, 357.
Bantayán, town, 427.
Banuaon, tribe, 469.
Barangay, description of, 400.
Barrado, Father Eusebio, S. J., report on Calayo or Volcán volcano by, 206.
Barrios, definition and description of, 57, 59.
Barrows, Dr. David P., Chief of Bureau of non-Christian tribes, history of Christian or civilized tribes by, 411–453; history of non-Christian tribes by, 453–477; Chinese and other foreign elements in Filipino races, discussed by, 477–491.
Basco, Governor, reoccupation of Batán Islands by, 448.
Basilan, island, description of, 73; birds of, 74; early pearl fisheries of, 416; military district of, 562.
Basud, river, location and navigable length of, 65.
Bataán, province, lack of streams in, 64; population of, 421; description of inhabitants of, 517.
Batanes, islands, character of inhabitants of, 448.
Bantañganes, tribe, 469.
Batangas, province, temperature of, 98; population of, 433; coffee, production of, 446; Spanish element in, 479; description of inhabitants of, 518–521.
Batak, tribe, 461, 469.
Bats, number of species, 73.
Bay of Bacoor, Spanish squadron destroyed in, by Dewey, 386.
Bay of Batangas, population in vicinity of, 422.
Bayabas, Mt., height of, 63.
Baylies, Capt. James, enumeration of Moros in Cottabato by, 25.
Bayombong, town, founding of, 449.
Beardsley, J. W., statistical information furnished by, 60.
Becerra, colonial minister of Spain, important legislation by, 375.
Becker, Dr. G. F., report of, 79; report of, on relation of Philippines to adjacent islands, 185; structural formation of Philippines summarized by, 185; report on general distribution of volcanic rocks by, 189; summary of the geology of Philippine Islands by, 194, 195; summary of the volcanic vents by, 215, 216; description of Mayón volcano by, 222–226; summary of reports on eruptions of Taal volcano by, 230–232; comments on Zúñiga's theory of Taal volcanic region by, 234, 235; summary of report on volcanic eruptions of Benguet center by, 241.
Benedictines, number of, in 1898, 346 (*note*).
Benguet, province, occurrence of coral limestones in, 52; minerals found in, 84; climatic conditions in, 183; volcanic vents and fissures of, 241; records of earthquakes in, 244.
Bennett, Gov. L. E., supervisor of Nueva Vizcaya, report of, 24; description of Ilongots by, 545–547.
Bertelli, microseismometer or tromometer invented by, 198–200.
Bicol, river, location and navigable length of, 65; population of vicinity of, 419.
Bicols, tribe, characteristics of, 523, 524.
Bikol. *See* Bicol.
Bilans, tribe, general description of, 462, 469, 560, 561; Blumentritt on derivation of word, 462.
Biliran, island, location and area of, 67.
Bill of rights of Philippine Islands, 373.
Binahaan, river, location and navigable length of, 67.
Binañgonan, island, submarine seismic center in, 198.
Binintian, volcano, location and description of, 228; Munti crater, 228; Malaqui crater, 229.
Binluay, extinct volcano, location of, 63.
Binondo, Chinese inhabitants of, 490.
Birds, of specified islands, 74.
Bishoprics of Cebú and Albay, population of, 439, 440.
Biumaca, Mt., height of, 61.
Blumentritt, Prof. Ferdinand, historian, 461, 462, 467, 479.
Boat builders, 464.
Bohól, island, description of, 49; rivers of, 67; description of inhabitants of, 525.
Bojeador, cape, location and description of, 243.
Bombón, lake, description of, 230; Zúñiga's theory regarding, 234; comments of Dr. G. J. Becker on, 234, 235; population in vicinity of, 422.
Bonifacio, Andrés, revolutionary movement organized by, 383, 384.
Books, symbols employed in writing, 327; materials used, 327.
Borax, occurrence of, 86.
Borneo, island, Mohammedanism in, 328; early explorations of, 413; description of, by Pigafetta, 416; Chinese element in, 478; commerce of Philippines with, 479.
Bourns, Maj. Frank S., description of Filipinos by, 504, 505.
Bowring, Sir John, governor of Hongkong, Filipinos described by, 497.
Brahminism, influence of, 412.
Brock, Van den, account of submarine disturbances by, 218, 219.
Buencuchillo, Father, description of eruptions of Taal volcano by, 230, 232, 233.
Bukidnon, tribe, 469, 470.
Bulacán, province, temperature of, 98; tobacco production of, 358; fortification of, by Aguinaldo, 385; population of, 421; commerce of in Zúñiga's time, 435; Spanish element in, 479; Chinese wealth in, 489; description of inhabitants of, 516.
Buldan, lake, description of, 72.
Bulusan, volcano, height and condition of, 63; location of, 189; description of, 227.
Bunnayan, tribe, 469.
Buquit, tribe, 470.
Bureau of Ethnology, classification of tribes by, 467.
Bureaus of insular government, 371.
Burias, island, extent of, 66; relation to Luzón, 221; population of, 422.
Bustamante, Governor, assassination of, 317, 341.
Busuañga, town, home of Tagbanúa, 460.
Butpula, mountain, location and height of, 73.
Bútuan, population of, 422; trading mart of, 482.
Butulan, Mt., description of, 202.
Buzeta, historian, estimates of population by, 443; data compiled by, 443 (*note*); comments by, on personal taxation of Chinese 490; *Diccionario* by, 432.

Cababiyan, river, location and navigable length of, 65.
Caballan, volcanic cone, height of, 67.
Cabeza de Tablas, height of, 70.
Cabiañgón, river, location and navigable length of, 68.
Cabildo of Manila, definition of, 393, 394.
Cabuyan, island, population of, in 1591, 422.
Cagayán, province, volcanic disturbances in, 245; tobacco production in, 358, 446; organization of province of, 365; early population of, 421; rebellion of, in 1589, 424; increase in population of, from 1735 to 1800, 439.
Cagayán, river, description of, 63, 72.
Cagayán, valley, volcanic disturbances in, 245.
Cagayán Sulu, islands, acquisition of, from Spain, 49; description of, by Pigafetta, 416; Mohammedanism in, 416.
Cagayánes, tribe, description of, 449, 458, 511, 512.
Cagua, volcano, location of, 189.

Caimanes, lake, description of, 239.
Caintá, town, inhabitants of, at time of Legaspi's visit, 418; conquest of, by Salcedo, 418, 419.
Calaganes, tribe, 470.
Calamba, town, friar lands claimed by inhabitants of, 382.
Calamianes, islands, population of, 422, 425; number of Christians in, 441; Moro attacks upon, 441.
Calatrava, river, location and navigable length of, 69.
Calauag, river, location and navigable length of, 65.
Calayán, island, population of, 421, 448.
Calayo, or Volcán volcano, report on, 200, 206.
Calilaya, island, jurisdiction of, in 1591, 422; population of, 422.
Calilyan, river, location and navigable length of, 65.
Calingas, tribe, 470.
Calumpán, river, location and navigable length of, 65.
Camacho, archbishop of, obedience of friars enforced by, 342, 343.
Camarines. *See* Ambos Camarines.
Camba, General Garcia. *See* Cortes, Filipino representation in.
Cambodia, commerce with, 479.
Camiguin, island, location and description of, 72, 73, 200, 208–215.
Camiguin, volcano, 208–215; condition of, previous to 1871, 210; eruption of, 1871, 210–212; visit of Challenger expedition to, in 1875, 212; island formed by ejecta from, 246.
Camiguing, island, population of, 421, 448.
Camotes, island, jurisdiction of, in 1591, 422.
Canlaón, volcano, height of, 68, 189, 221.
Cano, Don Juan Sebastian del, circumnavigation of the globe completed by, 310.
Cap, island, settlements on, 464.
Capas, municipality, 436.
Cape Bojeador, 245.
Cape Engaño, 246.
Cape of Good Hope, early Spanish route to Molucca Islands via, 310; trade with Spain via, 445.
Cape of Holy Ghost, 351.
Cape San Agustin, 70.
Cape Verde Islands, 309.
Cápiz, province, ancient fortifications of, 321; early population of, 441; Spanish element in, 479; description of inhabitants of, 524, 525.
Capuchins, number of, 346.
Capul, island, early population of, 422, 425.
Caraballos Occidentales, mountain range, 60.
Caraballos Sur, mountain range, 60.
Carabao, limited number of, 73; effect of loss of, on agricultural industries, 357.
Caraga, settlement of, 440.
Carnivora, number of, 73.
Carreri, traveler, Chinese described by, 489.
Casiguran, Tagálog settlement, 423.
Castro, Fernando, forested area estimated by, 77.
Catalanges, tribe, 470.
Catanduanes, island, description of, 65; early population of, 422.
Catarmán, Mt., volcano, 210.
Catbagangs, tribe, 470.
Catholic Church. *See* church.
Caua, volcanic cone, 246.
Cautarag, mountain peak, location and height of, 70.
Cavite, city, capture of, by Americans, 324, 386; early population of, 434; importance of, as defense of Manila, 434.
Cavite, province, ancient fortifications of, 321; English occupation of, 321; insurrection in, 376, 377; early population of, 421, 434; foreign element in, 479, 480.
Cebú, island and province, description of, 68; harbor of, 68; birds of, 74; coal region of, 215; earthquakes of, 215; organization of government of, 312, 399; ancient fortifications of, 321; audiencia of, 399, 400; early trade of, 415; Magellan's visit to, 415; condition of, at time of voyage of Legaspi, 417; early population of, 422; description of inhabitants of, 493, 527, 528.
Cecchi, seismograph and microseismograph invented by, 200.
Célebes, islands, volcanic origin of, 185, 186; earthquakes in, 197.
Célebes, sea, 50.
Census of Philippine Islands, scope of inquiries of, 11, 12; conditions essential to taking of, 13; Spanish language adopted for, 13; difficulties encountered in taking, 13, 14, 35, 36; plan and organization of, 16, 17, 21, 57; instructions in regard to, 17–19; hostility of Filipinos to, 19, 22; the Taft proclamation in regard to, 20; subjects treated in, 27; acts to provide for, 587–595; officers, clerks, etc., of, 597–601.
Centeno, volcanic regions described by, 193, 194, 243–245.
Chaffee, Maj. Gen. A. R., 388 (*note*).
Chao Ju Kua, account of early Chinese trade by, 481, 482.
Charles III, Jesuits expelled by, 322; promotion of insular trade by, 354.
Charles V, equipment of Magellan for voyage of discovery by, 310.
Charts, Spanish coast, inaccuracy of, 51, 57.
Chico, river, location and navigable length of, 64.
China, subjugation of, planned by early Spaniards, 314; commerce with, 346, 347, 479; Ming dynasty, 481; Spanish trade with, 482.
China sea, formation of baguios in, 160.
Chinese, enumeration of, 38, 39; occupations of, 39; restriction of immigration of, 318, 491; insurrections and massacres of, 319, 485–489; expulsion of, 319; legislation in regard to, 320, 487, 489; alleged dominion of, 326 (*note*); taxation of, 358–361, 490; earliest appearance of, in archipelago, 481; influence of, on industrial development of the islands, 333, 482–491; professional men among, 483, 484; efforts to Christianize, 483; intermarriage of, 489; number of, 490.
Chirino, Padre Pedro, historian, 425, 484.
Cholera, prevalence of, in 1902, 42; epidemic of, in 1820, 323, 345; population decreased by, 444.
Christian tribes, general summary of, 38, 39; doctrinal teaching of, 426; description and enumeration of, 448–453.
Christianity, introduction of, 32.
Christie, Emerson, extracts from reports of, on Filipinos, 552–559.
Church, Catholic, decline of power of, 34; temporal power of, 335; decline of temporal power of, 338, 339; separation of, from state, 339; number of members in islands, 346; organization of, 369, 370; dissensions of, with audiencia, 395; buildings, 449.
Cigars, quality of, in Manila, 40.
Citizenship, rights of, guaranteed by American sovereignty, 371.
Civilization, nonprogressive character of, in early history, 33, 34, 336, 337; effect of Spain's colonial policy on, 340, 341.
Cleopatra's Needle, mountain, location and height of, 70.
Clerks, American, in office of Director of Philippine Census, 597; native, for examination of Philippine Census schedules, 598.
Climate, healthfulness of, 43; effect of latitude and altitude on, 87, 88; effect of the soil on, 89, 90; influence of mountains on, 89; effect of vegetation on, 90; effect of cloudiness on, 104.
Climatology, summary of important facts in, 106.
Clouds, 106, 146–152.
Coal, occurrence of, 79–81; quality and quantity of, 80, 81; value of, to commerce, 81.
Coasts, description of, 50–52.
Cogtong, river, location and navigable length of, 68.
Colla, atmospheric phenomenon known as, 154.
Colleges, San José, 335; Santo Tomás, 335, 336; San Juan de Letran, 336.
Colonial government, intimate relation between church and state in, 361, 362; religious character of laws under, 362; legislative, judicial, and executive power provided for under, 362–364; order of succession of executive, provided for under, 363, 364; military and naval affairs of, 364; formation of provinces for administrative purposes by, 365.
Colonial policy of Spain, 30–34, 340, 341.

Comandancia, definition of, 59.
Combes, Jesuit historian, reference to writings of, 462.
Commerce, Chinese and Japanese trade, a factor in development of, 327, 346, 347, 489, 490; restrictions of, in trade with Europe and the Americas, 347-349; Spain's monopoly of, with America, 348, 349; shipping regulations of, 349; free trade established for encouragement of, 355, 356; opening of ports to foreigners, 446; effect of foreign population on, 479; effect of Spanish settlement of Manila on, 482.
Commerce and Police, department of, 371 (*note*).
Commercial court, jurisdiction of, 405.
Commission, Philippine, legislative functions exercised by, 370, 371.
Comyn, Tomás de, Filipinos described by, 349, 495 (*note*).
Concepción, Fray Juan de la, reference to writings of, 485, 486.
Constabulary, Philippine, 373.
Contentious court, jurisdiction of, 405, 406.
Convent of, Our Lady of Candelaria of Dilao, Our Lady of Loreto of San Pálok (Sampáloc), San Diego de Polo, San Francisco de Meycauayán, San Martin de Bocaue, Santa Ana de Sapa, 428; Cadiguran de San Antonio, La Natividad de Pángil, San Antonio de Pila, San Bartolomé de Nagcarlán, San Francisco de Lumban, San Gerónimo de Mórong, San Gregorio de Majayjay, San Ildefonso de Tanay, San Juan Bautista de Lilio, San Luis de Luchán, San Marcos de Binañgonan, San Pedro de Siniloan, San Salvador de Cavinti, Santa Cruz, Santa María de Caboan, Santa María de Mabitac, Santa María Magdalena de Pililla, Santa Úrsula of Binañgonan, Santiago de Paete, 429.
Convento, definition of, 58.
Copper, occurrence of, 81-84.
Corcuera, Governor, insurrection due to, 487; regulations in regard to Chinese amended by, 490.
Cordillera Central, mountain range, location and description of, 60, 61, 68.
Cordillera Norte, mountain range, location and description of, 60, 61.
Cordillera Sur, mountain range, location and description of, 61.
Corregidor Island, ancient fortifications of, 321.
Cortes, representation of Filipinos in, 322, 323, 446.
Cottabato, district, enumeration of Moros in, 25, 26; seismic activity in, 202.
Council of Indies, taxation of Chinese prescribed by, 359; powers of, defined, 361, 362; publication of recapitulation of laws by, 362; provisions of, in regard to Philippines, 395, 396.
Courts, civil, 398, 408; military, 398, 404, 408, 409; Supreme, Spanish, 399; of First Instance, 400-402; ecclesiastical, 404; commercial, 405; treasury, 405; contentious, 405, 406; probate, 406; Major-General Merritt's proclamation concerning condition of, 407; Philippine, 407-410; provost, 408, 409; local, reestablishment of, under civil government, 409; language of, 410.
Crater lakes of Taal volcano, description of, 228, 229.
Cristiana Negrita, tribe, 470.
Cryptophones, 200.
Cuernos de Negros, mountain peak, height of, 68.
Culañgalan, extinct volcano, location of, 63.
Culión, island, ancient fortifications of, 321.
Currency, exchange medium used in primitive times, 327; denominative values of coins used, 357.
Currents, Equatorial, 56; effect of, 90; ocean, direction and effect of, 90; air, higher, 146-152; air, extraordinary, 152-183.
Custom-house, establishment of, in Manila, 347 (*note*).
Cuyo, island, ancient fortifications of, 321; population of, 422.
Cyclones. *See* baguios.
Cyclones in the Far East, The, reference to, 176; extracts from, 199.

Dadayag, tribe, 471.
Dáet, town, municipal government of, 523.
Danao, river, navigable length of, 69.
Dapitan, comandancia, mountains of, 72; ancient fortifications of, 321.
Daraga, town, location of, 63.
Dasmariñas, Gov. Gómez Pérez, 396, 484, 485.
Dasmariñas, Gov. Luis Pérez, Chinese insurrection quelled by, 319; encouragement of trade by, 347.
Datos, prerogatives of, 400; cruelties and abuses of, 577-579.
Dávao, direction of clouds in, 152; seismic observations in, 202-204.
Davis, Maj. Gen. Geo. W., presentation of ancient map of Manila by, 321 (*note*); extract from report of, on Filipinos, 573-585.
Day, Maj. M. W., description of Bagobo and Mandaya tribes by, 561.
De Moluccis Insulis, letter on Magellan's voyage, 415.
Death rate in 1902, 42.
Deaths, adoption of international classification of causes of, 43.
Dechevrens, Father Marc, reference to writings of, 152 (*note*).
Dedica Reefs, volcano of, 246.
Defective classes, comparison of, with United States, 39.
Departments of insular government, 371 (*note*).
Dewey, Commodore George, blockading of Manila by, 324; surrender of Manila to, 324.
Diccionario, Buzeta's, extract from, 442, 443, 490.
Dinágat, island, description of, 73.
Dinwiddie, governor of Lepanto-Bontoc, report of, on copper and gold deposits, 82; extracts from report of, on Igorots, 533-544.
Diseases, enumeration of, 42.
Districts, census supervisors', officers of, 598-601.
Districts, military, number of, 59.
Diwata, deity, sacrifices to, 463.
Dominicans, early work of, 315; educational work of, 334, 336; number of, in 1898, 346 (*note*); region assigned to, 425; efforts of, to Christianize Chinese, 483.
Donsol, river, location and navigable length of, 65.
Drake, English corsair, capture of Spanish nao by, 352.
Draper, Brigadier. *See* Manila, English occupation of.
Drifts, surface, effect of, 56.
Dumagás, river, navigable length of, 70.
Dumagat, tribe, 471.
Dutch, invasion by, 430.
Duties and customs, imposition of, 347 (*note*); tariff rates fixed by committee on, 356; revenue derived from, 359; present collections compared with those under Spanish régime, 360, 361.

Earthquakes, frequency of, 195, 196; principle of occurrence of, 196; varieties of, 196; regions of greatest activity, 197-254.
Ecclesiastical court, jurisdiction and personnel of, 404.
Ecnig, tribe, 471.
Education, early work of monastic orders in, 32, 34; Catholic Church, in charge of, 40, 41, 333-336; nonprogressive character of, 336; progress of, due to Western influences, 336, 337; provisions for, by United States, 339; political, 447; public school system, 447.
El Filibusterismo, political novel, purpose of, 382.
Elevations, list of, 255-262.
Emancipation from Spain, disturbances, uprisings, and insurrections, 374-388.
Emigration, laws restricting, 332, 333.
Encomenderos, authority of, 330; abuse of slaves by, 331; ordinance of 1512 regarding, 423.
Encomienda, definition of, 312 (*note*), 330, 420; duration of system of, 423.
Engaño, cape, volcanic cone in region of, 246.
England, Spanish war with, 320, 321; commerce with, 356.
English, capture of Manila by, 431; occupation of Manila by, 489.
Entrada de la Serífica Religion de Nuestro P. S. Francisco en las Islas Filipinas, extract from, 427.
Enumerators, Philippine Census, appointment, instruction, and salaries of, 13, 16-19.
Epocaó, tribe, 471.

Exports, 348-351, 357, 445.
Expeleta, Miguel, 320; surrender of Manila by, 321.

Fabi, Angel, Filipinos described by, 505.
Fauna, general remarks regarding, 73, 74.
Faura, Father, S. J., systematic study of baguios begun by, 29.
Featherman, A., Tagálogs described by, 498.
Ferrer, Father Baltassar, notes on clouds, by, 152.
Filipino League, reforms attempted by, 383.
Filipinos, intelligence and capacity of, 44; spoliation of, by early Spanish officials, 391; description of, by Legaspi, 493; by Francisco de Sande, 493; by Antonio de Morga, 494; by Gaspar de San Agustin, 494; by Joaquin Martinez de Zúñiga, 494, 495; by Tomás de Comyn, 495; by Dr. Paul de la Gironiére, 495, 496; by Robert MacMicking, 496; by Feodor Jägor, 496; by William Gifford Palgrave, 497; by Sir John Bowring, 497; by A. Featherman, 498; by Rudolf Virchow, 498, 499; by Dean C. Worcester, 499, 500; by John Foreman, 500-503; by Frederic H. Sawyer, 503, 504; by Dr. Manuel Xerez, 504; by Maj. Frank S. Bourns, 504, 505; by Maj. Gen. Arthur MacArthur, 505; by Angel Fabi, 505; by Rev. Homer C. Stuntz, 506, 507; by Archbishop Nozaleda, 507, 508; by Ramón Reyes Lala, 509, 510; by David P. Barrows, 510, 511; by Gov. W. H. Taft, 529-531.
Finance, monetary standard of Philippine Islands, 357; collection and expenditure of municipal funds, 369.
Finance and Justice, department of, 371 (*note*).
Firearms, Filipinos prohibited from the purchase or carrying of, 371 (*note*).
Fish, abundance of, 74.
Fisheries, pearl, 416.
Flora, description of, 75.
Flores, Father Cosme de, Christian teaching of, 426.
Foreman, John, historian, Filipinos described by, 500-503.
Forestry Bureau, report of, 78.
Forests, extent of, 75, 77; products of, 75, 78; variety of woods in, 75; altitude of, 76; value of, to Government, 77; method of logging, 77; timber production, amount of, 78.
Forrest, Captain, historian, 467.
Forts, description of, 321.
Franciscans, early missionary work of, 315; number of, in 1898, 346 (*note*); educational work and influence of, 427; convents of, 428, 429.
Friars, review of work of, 32-35, 340-346; financial condition of, 344-346; number of, in archipelago, 346 (*note*); value of landholdings of, 346 (*note*); municipal duties of, 369, 370 (*note*); relation of, to Spanish government, 378, 379; petitions for expulsion of, 382, 383.
Funston, General, capture of Aguinaldo by, 430.

Gaddang or Gaddan. *See* Igorot tribe.
Gannett, Henry, assistant director of Philippine Census, statistics collected by, 17.
García, Regino, special contributions to census statistics by, 36; article on the cultivation of rice by, Vol. IV.
Geology, historical, of Philippine Islands, 194, 195.
Gibabuan, tribe, 471.
Gilmore, Lieutenant, capture of, by insurrectos at Baler, 430.
Gironière, Dr. Paul de la, Filipinos described by, 495.
Gisbert, Father Mateo, ascent of Apo volcano by, 202.
Gobernadorcillo, election of, 365.
Gold, occurrence of, 79, 81, 82.
Government (under Spanish régime), local complaints against arbitrary nature of, and resultant changes in, 314; local, 325-339; no participation in, by Filipinos, 337; colonial policy from earliest times, 361-370; continuance of tribal authority under, 365, 366; municipal, 367, 368; appointment of high functionaries, 370; beginning of dissatisfaction with, 374, 375; alleged movement of secession, 377; persecution of Filipinos who opposed the friars, 378; abuses leading to movement of secession, 379, 380; influence of press in arousing discontent with, 380; organization to overthrow, 383; reforms in, demanded by Filipinos, 383 (*note*); repressive measures adopted by, 385; persecution of suspected revolutionists, 385; revolt of Ilocos against, 447; relation to Chinese government, 482.
Government (insular), local, 339; purchase of friar lands by, 346 (*note*); changes in, under United States sovereignty, 370; executive departments and bureaus of, 371; provisions for legislative assembly, 371; municipal, 372, 373; support of, 373; police force of, 373; insurrection of Filipinos against, 387.
Governor, civil, duties and powers of, 366, 367, 370; method of indictment of, 392; provincial, appointment of, 402.
Grande de la Pampanga, river, population in valley of, 419.
Guagua, Chinese riot in, 320.
Guanga, tribe, 471.
Guam, island, cyclones in, 156; earthquakes of, 197.
Guía, Oficial, description of Apo volcano in, 203; of Bulusan volcano, 227.
Guía de Manila, statistics given in, 443.
Guimarás, island, area of, 69; under jurisdiction of Panay, 422.
Gypsum, occurrence of, 85.

Haciendas, King's grant of, to first conquerors, 434.
Halcón, Mt., height of, 66; settlement of Igorots on, 460.
Harbors, inefficiency of, 52; classified list of, 54, 55.
Head-hunting tribes, 412, 437, 458, 462, 463, 471.
Hemp, production of, 40, 356, 357, 463.
Hickok, Capt. H. R., account of enumeration of Siassi Moros by, 27.
Himagaaon, river, navigable length of, 69.
Hindus, power and influence of, 412, 451.
Historia General de las Filipinas, by Fray Juan de la Concepción, extract from, 486.
Historical View of the Philippine Islands, by Joaquin Martinez de Zúñiga, extract from, 494.
Holland and Spain, early conflict between, 317, 318.
Homonhón, island, landing of Magellan on, 413.
Hongkong, observatory of, 152; Aguinaldo's agreement to move to, 385.
Hospitals, establishment of, in early history of islands, 33.
Houses, character of, 59.
Humidity, relative, monthly and annual averages of, in Manila, 122-128.

Ibánag, tribe, where found, 448; dialect of, 449.
Ibavao (Leyte), island, population of, 425.
Ibilao, tribe, description of, 464, 468, 471.
Ibung, town, founding of, 449.
Ifugao, tribe, 471.
Igbanig, mountain peak, location and height of, 69.
Igorots, method of enumeration of, 24; ethnological classification of, 412; uncivilized condition of, at time of Zúñiga, 438; relation of Gaddang to, 449, 468; tribes classified as, 456-458, 471; general information concerning, 533-545.
Ilano, tribe, description of, 466, 472; classification of, 561, 562.
Iligan, district, enumeration of Moros of, 25.
Illana, bay, earthquakes of, 197, 206, 207.
Ilocanos, alphabet used by, 327; etymology of name of, 449, 450, 468; comparison of, with Tagálogs, 508; description of, 511-515.
Ilocos, Norte and Sur, provinces, lack of rivers in, 64; earthquakes of, 245; seismic waves in, 250; organization of provinces of, 365; population of, 421, 438; tobacco production in, 446; revolt of, 447; description of inhabitants of, 511.
Iloilo, province, winds of, 146, 197; ancient fortifications of, 321; conquest of, by Legaspi, 418; Spanish element in, 479; description of inhabitants of, 527.
Iloilo, river, navigable length of, 70.
Ilokano. *See* Ilocano.
Ilongots, tribe, classification of, 472; description of, 545-547.

Immigration, of Chinese restricted, 318, 333; of Arabs and Hindus, 412.
Imports, from Mexico, 351, 445; from Japan, 479; from China, 482, 484.
Improvements, public, 446.
Inabaňga, river, description of, 68.
India, trade with, 427, 479.
Indians, treatment of, 390; Mexican, influence of, on population, 480.
Indies, council of. *See* Council of Indies.
Indio, definition of, 431 (*note*).
Indonesian, tribe, classification of, 462.
Industry and commerce, development of, 445; effect of Chinese competition on, 485.
Infieles, tribe, 472.
Inhabitants of the Philippines, The, by Frederic H. Sawyer, extract from, 503.
Inquisition, jurisdiction of, in Philippines, 33.
Insects, number of species of, 74.
Institutions, educational, 335, 336.
Instruments, seismic, 198–200.
Insular trade, companies organized to carry on, 354; opening of ports to foreigners, 355, 356; factors in development of, 355–357.
Insurrections against Spain, 323, 374.
Interior, department of, 371 (*note*).
Ipil, river, location and navigable length of, 68.
Ipukao, tribe, 472.
Iriga, volcanic peak, height of, 63; eruption of, 226.
Irocin, river, location and navigable length of, 65.
Iron, occurrences of, 79, 84; quality of, 85.
Isabela, province, volcanic disturbances in, 245; dialect of, 449.
Isabela, town, location of, 73; ancient fortifications of, 321.
Isabela II, movement for emancipation from Spain, during reign of, 374.
Isanay, tribe, relation of, to Igorot, 449, 472.
Isarog, Mt., height of, 63; extinct volcano of, 189.
Isinac, tribe, 472.
Islamism, influence of, 412, 463.
Islands, Philippine. *See* Philippine Islands.
Islas Samales, location of, 465.
Isotherms, irregularity of, 90.
Isthmuses, submerged, connection of Borneo and Célebes with Philippine Islands by, 50.
Ita, tribe, 472.
Ituy, mission of, 439, 449.
Izquierdo, General (1871–1873), repressive measure adopted by, 376–379.

Jaena, writer of revolutionary sentiment, 380.
Jägor, Feodor, ascent of Mayón volcano by, 224; Filipinos described by, 496.
Jalajala, peninsula, volcanic formation of, 239.
Jalaur, river, description of, 69.
Japan, typhoons of, 162; subjugation of, planned by early Spaniards, 314; commerce with, 347, 427, 479.
Japan current, direction of, 56.
Japanese, element in Filipino race, 478; settlements by, 480.
Jaro, river, navigable length of, 69.
Jernegan, P. F., contributions to census statistics by, 36; article on education under the Americans, Vol. III.
Jesuits, expulsion of, 34, 322; educational work of, 334, 336, 417, 426; power of, 345; first coming of, 424, 425; missionary work of, 440; work of, in tribe classification, 467.
Joló island, description of, 73; home of Sulus, 414.
Joló (Sulu), sea, depth of, 184; submarine seismic center in, 198; peculiar features of region of, 207.
Joloana, tribe, 472.
Jomonjol, island. *See* Homonhón.
Judge-advocates, power and prerogatives of, 398.
Judiciary, description of, 389, 409; personnel of, provided for, 409.
Junta, general convention of, in Manila, personnel of (1586), 395.
Jury, no trial by, 371 (*note*).
Justices, irremovability of, royal order establishing, 398.
Justices of the peace, duties of, 402–404.

Kalibugan, tribe, conversion of, 466; classification of, 472, 561.
Kalingas, tribe, 472.
Kennon, Maj. L. W. V., account of enumeration of Moros of Iligan by, 25.
Kina Balu, mountain peak of, 185.
Kock, Otto, Apo volcano described by, 203.
Koran, 569–571, 574.
Koto, description of volcanic belt by, 187.
Krakatoa, group (volcanic), 236.
Kue-Sing, Chinese pirate, 319, 482, 488, 489.
Kurile, islands, mountain ranges of, 196.

La Laguna, province, population of, 419, 422, 433; Spanish element in, 479.
La Torre, Governor-General, 375.
La Unión, province, lack of rivers in, 64; tobacco cultivation in, 358; description of inhabitants of, 511.
Labó, Mt., height of, 63.
Laguna de Bay, description of, 62, 64; relation to Maquiling volcano, 236; outlet of, 247; Chinese settlements on shores of, 487.
Laguna de Mainit, location of, 70.
Lala, Ramón Reyes, description of Filipinos by, 509.
Lamenusa, island, home of Sámal, 464.
Lanao, lake, description of, 72, 88; earthquake of, 197; military districts of, 562.
Landargan, mountain, location and height of, 70.
Language, Sanskrit element in, 412; aboriginal tongue, 448; dialects, 448, 449, 461, 515, 516.
Lasada, Juan Pardo de, convent founded by, 428.
Latitude, climate as affected by, 88.
Lavezares, Governor, measures against abuse of slaves adopted by, 331.
Laws, royal, religious, character of, 362; publication of code of, 362; in behalf of natives, 389.
Laws of the Indies, origin of, 32; homes of encomenderos, prescribed by, 330; emigration of Spanish restricted by, 332; immigration of Spanish restricted by, 333; enforced labor of Filipinos prohibited by, 359; power of alcaldes prescribed by, 366.
Lead, occurrence of, 85.
Lecaroz, Juan Francisco. *See* Cortes, representation of Filipinos in.
Lechambre, General, revolutionary forces of Cavite quelled by, 385.
Legal tender, Mexican money not accepted as, 357.
Legaspi, erection of monument in Manila to, 31; founding of Manila by, 312; organization of government of Cebú by, 312; first governor and captain-general of Philippine Islands, 363; judicial power of, 389; early settlements described by, 417, 418; Filipinos described by, 493.
Legaspi, town, 63.
Legislative assembly, provisions for, 371.
Lepanto-Bontoc, province, organization of, 57; area and capital of, 58; copper and gold deposits in, 82; earthquakes of, 245; description of inhabitants of, 458, 533; agricultural industries of, 540.
Lepers, care of, by early missionaries, 33.
Leyte, island and province, area and capital of, 53; physical geography of, 66, 67, 185; birds of, 74; meteorological district of, 200; earthquake in, 251; population of, 422, 440; rebellion in, 424; settlement of Jesuits in, 425; Spanish element in, 479.
Liguasan, lake, description of, 72; Moro settlement around, 416.
Limahong, incursions of, 313, 482.
Limasagua, island, 414, 417.
Linapacan, island, ancient fortifications of, 321.
Linguienza, Capt. D. Antonio, 224.
Lizards, abundance of, 74.
Llave, Amelio A. y, contributions to census statistics by, 36; article on indigo by, Vol. IV.
Llorente, peak, location and height of, 69.
Loboc, river, navigable length of, 67.
Locusts, pestilence of, 419.
Logging, method of, 77.
Lovering, Maj. L. A., report of, on the Tagbanuas, 548, 549.
Luban, island, 425.
Lubang, island, early population of, 418, 422.
Lucena, river, location and navigable length of, 65.

Lumbang, river, navigable length of, 64.
Luzón, island, description of, 51, 60, 415; area of, 57, 60; mountains of, 62; birds of, 74; rainfall of, 119, 120; active and extinct volcanic cones of 186, 189; tuff region of, 191; earthquakes in, 197; meteorological stations of, 199; volcanic and seismic centers of, 221, 245, 246, 250, 251; insurrection in, against U. S., 288; Chinese trade with, 415, 416, 481; Mohammedanism established in, 416; conquest of, by Legaspi, 418; population of, 421, 422, 429; early settlement of, 421, 423, 436; tribes inhabiting, 451, 494; derivation and meaning of name, 484.
Luzuriaga, Hon. José, special contributions to census statistics by, 36; article on the cultivation of sugar cane, Vol. IV.
Lynch, Capt. Charles, international classification of death titles by, 43.
Lyon, W. S., contributions to census statistics by, 36; article on the cultivation of the coconut by, Vol. IV.

Mabalácat, population of, 436.
MacArthur, Maj. Gen. A., military governor of Philippines, 388 (*note*); extract from report of, 505.
Macaturin, volcano, 189; seismic center of, 205–207.
MacMicking, Robert, Filipinos described by, 496.
Macroseismic activity, region of, 197, 198; submarine, location of, 251.
Mactán, island, Magellan's death in, 310, 415; Cebú's jurisdiction over, 422.
Madiaás, mountain peak, 69.
Magat, river, 64.
Magellan, Ferdinand, discovery of the Philippine Islands by, 309; theory of, in regard to location of Molucca Islands, 310; other discoveries of, 413–415; death of, 415.
Magoló, volcano, 71.
Magtalisay, river, navigable length of, 70.
Maguindanao Moros, 416, 466–468.
Maize, culture of, 463.
Malabahoc, mountain, height of, 68.
Malabang, ancient fortifications of, 321.
Malabón, business center, 435.
Malakka, commerce with, 479.
Malálag, seismic observations at, 202.
Malanao, tribe, 473.
Malarial fever, prevalence of, 529.
Malay, element of, in Filipino race, 32, 411, 412, 477; description of, 497, 498.
Malhón. *See* Homonhón.
Malinao, volcano, 63, 189, 266.
Malindang, volcano, location of, 72.
Malolos, seat of revolutionary government, 387.
Mamanuas, tribe, 461, 473.
Mambúrao, Mohammedan stronghold, 418.
Mammalia, number and species of, 73.
Mandaya, tribe, home of, 462; classification of, 473.
Mangian, tribe, 472.
Manguanga, tribe, 473.
Manguianes, tribe, 473.
Mangyans, etymology of name, 460; tribal classification of, 473; general description of, 547, 548.
Manidi, tribe, 473.
Manila, bay, depth of, 62; early settlement in vicinity of, 412.
Manila, city, weather bureau of, 29; observatory of, 29, 156, 247; founding of, 31, 32, 312, 420; harbor of, 46; commercial importance of, 46, 47, 421, 479; thermic conditions of, 98–104; rainfall of, 108–128; winds in, 128–154; cyclones and storms observed in, 158–162; earthquakes in, 247–251; ancient fortifications of, 321; English evacuation of, 322; insurrection in, 323; cholera epidemic in, 323, 345; surrender of, to American forces, 324; blockade of, by Dewey, 324, 386; university in, 336; custom-house in, 347 (*note*); commerce of, with Mexico, 348, 352, 431; making a free port of, 355; seat of government under present régime, 370; early population of, 421, 425, 438, 479; suburbs of, 428; capture of, by English, 431; archbishopric of, 438; Asiatic people in, 479; commerce of, 479.
Manobo, tribe, etymology of name, 461; classification of, 473.
Manoke Manka, island, home of Sámal, 464.
Manovos, tribe, 473.
Mansaca, tribe, 473.
Mantabúan, island, home of Sámal, 464.
Mantalingajan, mountain, altitude of, 70.
Manufactures, 46, 355.
Maps, use of, in census enumeration, 14; inaccuracy of topographic information, 51.
Maquiling, volcano, location and height of, 189; description of, 236; present activity of, 238; relative position of, to Manila, 247; seismic centers of, 250.
Maragondóng, municipality, settlement of, 435.
Marble, occurrence of, 85.
Marinduque, island, description of, 65; tobacco production of, 358; early population of, 425; inhabitants of, 521.
Mariveles, mountain, altitude, 61; secondary seismic center existing at, 249.
Masalacot, volcanic cone, 239.
Masaraga, volcanic peak, height of, 63.
Masbate island and province, physical geography of, 66; submarine seismic center of, 198, 227; early population of, 422, 425; description of inhabitants of, 522, 523.
Masó, S. J., Rev. M. Saderra, work in Manila observatory by, 30; special statistics to census by, 36; description of volcanoes and seismic centers by, 184–253.
Matantany, river, 65.
Matútum, volcano, description of, 71; location of, 189; peculiar features of, 202.
Maubán, Tagálog settlement, early population of, 423.
Mayi, Chinese name for Philippines, 481.
Maymagui, mountain, location and height of, 69.
Mayón, volcano, location and description of, 63, 189, 222–226, 243; eruptions of, 225.
Mayoyao, tribe, 473.
Mayuboc, river, location and navigable length of, 65.
Mendoza, Father Juan Gonzales de, author of *History of China*, 326.
Mercury, occurrence of, 85.
Merritt, Gen. Wesley J., surrender of Manila to, 324; proclamation of war issued by, 386, 387; proclamation concerning military occupation of islands issued by, 407.
Mestizo, word defined, 431 (*note*). Chinese, distribution of, 438.
Mexico, trade with, 348–354, 445; subsidy from, 431; silver brought from, 482, 485.
Microseismographs, 198, 200.
Microseismometer, description and use of, 200.
Military, force of Spain in Philippines, 33; service, requirements of, under Spanish régime, 373.
Military and naval courts, jurisdiction of, 404.
Milne, Prof. J., classification of earthquakes by, 196; observations of seismic disturbance by, 196; suboceanic features of Philippine archipelago noted by, 196; microseismic activity, region of, defined by, 197; microseismograph invented by, 198; report on seismic center of Panay by, 220.
Mindanao, island, wild tribes of, 24; description of, 51, 57, 70, 72, 415; mountains of, 70, 71, 185; birds of, 74; averages of rainfall at specified places in, 120; result of low barometer in, 153; volcanic cones in, 189; earthquakes and volcanoes in, 197, 198, 200, 221; seismic observations in, 202; epicentral region of, 205; seismic foci of, 216–221; Mohammedanism in, 328, 413, 414, 416; resistance in, to American authority, 388; early kings of, 414; population of, 419, 422; Sultan of, 466; Chinese trade with, 481.
Mindoro, island, size and description of, 65; tobacco produced in, 358; Mohammedan influence in, 413; conquest of, by Legaspi, 418; population of, 422; depopulation of, by Moro pirates, 434; Spanish element in, 479.
Minerals, occurrence and production of, 79–86.
Mines, in Negros and vicinity, 419; in Panay at time of Salcedo, 419.
Mining Bureau of insular government, report of, 79.
Mint, establishment of, in Manila, 357.
Misamis, province, area and capital of, 58; ancient fortifications of, 321; description of inhabitants of, 528, 529.

Missionaries, early work of, 313, 315, 423; power of monastic orders, 340-346; work of, among Chinese, 482.
Mitra, Mt., height of, 61.
Mohammedan tribes, difficulty in enumerating, 26.
Mohammedanism, conflict with Christianity, 32; establishment of, in islands, 412; extent and growth of, 413, 414, 465, 466, 561.
Molucca, islands, description of, 197; abandonment of Spanish claim to, 310; expeditions in search of, 310; Magellan's theory of location of, 310; conquest of, 315; Portuguese expulsion from, by Dutch, 316; transfer of authority over, to Spain, 316; Dutch trading stations established in, 317; financial dependence upon Spain, 358; abandonment of, 482.
Mollusca, abundance of, 74.
Monastic orders, Augustinian, Dominican, Franciscan, and Recoleto, early work and power of, 315, 340-346, 424, 425.
Monetary standard of Philippine Islands, 357.
Monkeys, number and species of, 73.
Montañes, tribe, 473.
Montano, seismic observations of Apo volcano by, 202, 203; account of volcano of Mainit Lake by, 207, 208; description of hot springs by, 227.
Monte Blanco, salt springs of, 243, 244.
Montero, Claudio, discovery of Caua or Cagua volcano by, 246.
Montes, tribe, 473.
Montescos, tribe, 473.
Monteses, tribe, description of, 460, 473.
Montojo, Admiral, commanding fleet destroyed by Dewey, 324; revolutionary forces of Cavite quelled by, 385.
Moret, colonial minister, reforms proposed by, 377.
Morga, De, expedition against Dutch led by, 318; description of Babuyanes by, 448; foreign element in islands noted by, 479, 485.
Moro, province, area and divisions of, 59.
Moros, census of, supervised by army officers, 17,19; methods of enumeration used in various districts, 24, 27; ancient firearms of, 326 (*note*); resistance of, to American authority, 388; Sanskrit element in language of, 412; description of, 414; settlements of, 415, 416; piratic expeditions of, 431, 434, 437, 441, 442; expense of defense against, 441; increase in population of, 444; meaning of name, 463; power of, 465-467; Chinese trade with, 490, 491; classification of tribes of, 561; reports of army officers describing tribes of, 561-585; characteristics of, 573-580.
Mortality statistics, inaccuracy of, 42; sources of, 42.
Mosquitoes, 74, 577.
Mountains, ranges and peaks, 60-73; influence of, on climate, 89.
Mundos. *See* Bukidnon.
Municipalities, geographic arrangement of, 57-59.

Nangtud, mountain peak, location and height of, 69.
Natugnos, pools, description of, by Abella, 238.
Navarrete, Father, description of Chinese merchants by, 484, 488.
Navigation, early, 326, 351.
Necoman, tide gauge, self-recording, invented and improved by, 200.
Negritos, ethnological classification of, 411, 468; mention of, by Pigafetta, 415; described by Zúñiga, 436; disappearance of, by absorption, 478; general information concerning, 532, 533.
Negros, island, physical formation of, 51; description of, 68; volcanic cones in, 189; population of, 415, 419, 422, 441; mines of, 419; sugar production of, 441, 446.
Negros Occidental, province, location of, 68; ancient fortifications of, 321; description of inhabitants of, 526.
Negros Oriental, province, location of, 68; description of inhabitants of, 525.
Noli me Tangere, political novel by Rizal, reference to, 380, 381.
Nomadas, tribe, 474.
Non-Christian tribes, enumeration of, 22-24; Mohammedan and pagan, 411, 412; description of, 453-468; classification of, 468-477; bureau of, 510.
North Ubián, island, settlements on, 464.
Nozaleda, Archbishop, description of Filipinos by, 36, 507, 508.
Nueva Cáceres, city, when founded, 420; bishopric of, 439.
Nueva Ecija, province temperature of, 98; seismic centers of, 239; tobacco production of, 358; population of, 421; establishment of province, 437; description of inhabitants of, 515.
Nueva Segovia, city, when founded, 420.
Nueva Vizcaya, province, method of enumerating inhabitants of, 24; seismic centers of, 239-245; description of, by Abella, 242-244; earthquakes, 243, 245.
Nuevos Christians, tribe, 474.

Observatory of Manila, establishment of meteorological department of, 29; equipment of, 30; observations reported by, 156; location of, 247.
O'Donnell, minister of war 1860, 447.
Offley, Capt. R. G., report on the Mangyans by, 547, 548.
Oidor of audiencia, office defined, 391 (*note*).
Olmsted, Victor H., assistant director of Philippine Census, statistics collected by, 17.
Orang Salat, tribe, 414.
Otaso, Francisco de, work of, in Sámar, 425.
Otis, General, municipal government under military supervision established by, 372 (*note*); Paris Treaty of Peace published by, 387; military governor of Philippines, 388.

Pacific volcanic belt, Philippine archipelago included in, 186.
Pack, Gov. W. F., report on minerals by, 84; extracts from report of, on Igorots, 535-544.
Paco, suburb of Manila, 428.
Pagan, deities, 327, 328, 415, 441, 463, 535.
Pagsán, mountain, height of, 61.
Palanan, Aguinaldo captured at, 430.
Palanca, Carlos, authority of Chinese enumeration substantiated by, 38.
Palauanas, tribe, 475.
Palawanos, tribe, 475.
Palgrave, William Gifford, Filipinos described by, 497
Palos, islands, location of, 184.
Pampanga, province, temperature of, 98; organization of, 365; population of, 421, 437; sugar haciendas in, 446; Spanish element in, 477; Chinese wealth in, 489; description of inhabitants of, 515, 517.
Pampanga, river, size of, 56; description of, 62, 64.
Pampangos, tribe, alphabet used by, 327; uprising of, 331.
Panay, island, size and description of, 69; earthquakes and seismic centers of, 220; conquest of, by Legaspi, 418; population and description of, 419, 422, 425, 441; jurisdiction of, 422.
Pangasinán, temperature of, 98; earthquakes and seismic centers of, 239-245; alluvial plains of, 241; tobacco production of, 358; organization of province of, 365; population of, 421, 437-439; exportation and production of rice in, 446; description of inhabitants of, 514.
Pangasinanes, tribe, alphabet used by, 327; description of, 514, 515.
Pañgutárang, island, settlements on, 464.
Pansipit, river, location and navigable length of, 65.
Paragua, island and province, addition of southern province, 59; description of, 70; Mohammedanism established in, 416; tribes found on, 460, 461.
Paranan, island, 425.
Paranaues, tribe, 475.
Pardo, Archbishop, failure of, to enforce royal decrees, 343.
Parian, history of, 318-320; building of, 347 (*note*); maintenance of, 359; population of, 423; description of, 483.
Paris Treaty of Peace. *See* Treaty of Paris.

Paschwitz, Dr. E. von Rebeur, observations of seismic disturbances by, 196.
Pásig, river, location of, 62; navigability of, 64, 69; building materials found on banks of, 238; course of, 247; settlements of Chinese on, 487.
Patling, hamlet, population of, 436.
Peopling of the Philippines, The, by Rudolf Virchow, extract from, 498.
Perry, description of volcanoes by, 186.
Pershing, Capt. J. J., enumeration of Lake Lanao Moros by, 24, 562.
Petroleum, occurrence of, 79, 85.
Philip II, islands taken possession of, in name of, 30, 311; conquest of Molucca Islands ordered by, 315.
Philippine assembly, provisions for, 11, 12.
Philippine Commission, certification of peace in the islands by, 11, 12; legislative functions of, personnel of, 370; organization of provinces by, 372; organization of judiciary by, 409.
Philippine Committee, Senate, testimony before, 510.
Philippine Islands, physical formation of, 30, 49, 50, 185; location of, 49; acquisition from Spain of, 49; boundaries of, defined by Treaty of Paris, 49; area of, 52, 57; municipal divisions of, 57; climatic conditions of, 87–89; location of, 88; weather service, arrangement of stations of, 92; distribution of rainfall over, 108–122; number of islands of, 184; mountains of, 184–186; situation and nature of, 184–194; suboceanic features of, 184, 185, 196; geology of, 194; earthquakes of, 195–254; elastic nature of, 196; cyclones of, 199; alphabetical list of, with location, 287–308; discovery of, 309, 310; Jesuits expelled from, 322; representation of, in Cortes, 322, 323; aborigines of, 324, 532; sovereignty of United States over, 324; audiencia in, 391; judiciary of, 402–410; population of, 411, 427, 442–445; Bureau of Ethnology, 467; peopling of, 498.
Philippine Islands, The, by John Foreman, extract from, 500.
Pi, S. J., Rev. Pio, report of, on the tribe of Moros, 573–585.
Pigafetta, chronicler of Philippines, 414–416.
Pilar, Marcelo H. del, editor of *La Solidaridad*, 380.
Pinacanauán, river, description of, 64.
Pinatan, river, navigable length of, 70.
Pines, altitude in which found, 76.
Pingarron, Father Francisco, report of eruption of Taal by, 230.
Piracy, warfare against, 323; defense against, 358; of Moros, 431, 434, 437, 441, 442; of Chinese, 482.
Platinum, occurrence of, 86.
Pocdol, mountain, location and height of, 63; hot spring in vicinity of, 227.
Polangui, river, location and navigable length of, 65.
Police instruction, department of, 371 (*note*).
Police, municipal, under present régime, 369, 373; corps, rural, urban, and maritime, under insular government, 373.
Polillo, island, description of, 65.
Polloc, volcanic rocks in regions of, 206; ancient fortifications of, 321.
Poniente, early name of archipelago, 310.
Poolete, Archbishop of Manila, attempt to enforce authority by, 342.
Population, authenticity of enumeration of, 36; distribution of, 76; of Philippine Islands, 411, 417, 419, 421, 442–445; of Christian tribes, 411, 447; of convents, 429; effect of trade on, 430; according to Franciscan reports, 433; Zúñiga's report on, 433; per cent of increase of, 443; annual increase of, 444; of non-Christian tribes, 453; of Christians, 447; Chinese and other foreign elements in, 477; ethnic source of, 478; effect of opening of Suez Canal on, 479.
Portugal, boundary of claims of, defined by the Pope, 309; union of, with Spain, 315.
Portuguese, discovery and conquest by, 412.
Presidio, definition of, 58; maintenance of, 441.
Press, censorship of, under Spanish régime, 338; freedom of, granted by act of Congress, 339; discontent with Spain spread by, 380.
Principales, power and wealth of, 446.
Printing press, first use of, in Manila, 334.
Proclamation of Governor Taft in regard to census taking, 20; of war with Spain, 386–388 (*note*).
Prosecution, public department of, organization and jurisdiction of, 403.
Provinces, and islands of same names, 57; areas of, 58; capitals of, 58; judicial divisions of, 401.
Pueblo, definition of, 58; organization of, 426.
Pulangui, river, description of, 72.
Pulijanes. *See* Bukidnon.
Pulo Volcán, description of craters of, 229.
Putiao, river, navigable length of, 65.
Putnam, G. R., list of islands made by, 28.

Quiñgua, river, navigable length of, 64.

Railroads, necessity of, 45.
Rainfall, conditions affecting, 28; distribution of, 108–122.
Rajá. *See* Dato.
Rajal, Joaquín, ascent of Apo volcano by, 202, 203.
Rankin, Father, work of, in Manila observatory, 200.
Real acuerdo, audiencia acting under name of, 397.
Rebellion against Spanish rule, 323, 324, 384–388.
Reclamación, definition of, 491.
Recoleto order, influence of, 315, 425; Jesuits superseded by, 322; number of, in 1898, 346 (*note*).
Recopilación de las Leyes de Indias, emigration of Spaniards restricted by, 332; publication of, 362.
Redding, Frank W., description of the Subanos by, 552–560.
Reina Regente, ancient fortification of, 321.
Relación, Franciscan, 449, 480.
Relación de Encomiendas, extracts from, 411, 419, 425, 439, 443, 448, 484.
Relación de las Islas Filipinas, extracts from, 425, 427, 484.
Relación del Descubrimiento y Conquista de la Isla de Luzón y Mindoro, extracts from, 418.
Religious orders, work and influence of, in early history of the islands, 32–34. *See also* Jesuits, Franciscans, Dominicans, etc.
Repartimientos, definition of, 312 (*note*), 412.
Reptiles, number of, 74.
Retana, author, 420, 482.
Revenue, inadequacy of taxes assessed for, 357; sources of, 358–360; receipts and disbursements of, 358–360.
Reyes, Don Ventura de los, delegate to Cortes, 322.
Rice, enforced sales of, 390; culture of, 419, 463.
Rio Chico, 449.
Rio Grande de Cagayán, 449.
Rio Grande de Mindanao, description of, 56, 72, 206.
Rivera, Gen. Primo de, 385.
Rivers, general description of, 56, 60–73.
Rizal, author, 380, 381; persecution of, 382; reforms attempted by, 383; execution of, 385.
Rizal, province, temperature of, 98; description of inhabitants of, 517.
Roads, necessity of, 40.
Rodents, scarcity of, 73.
Rodgers, Lieut. H., description of Bilans by, 560, 561.
Rojas, Pedro de, 396.
Romblón, province, area of, 58; ancient fortifications of, 321.
Ronquillo, Gov. Gonzalo, 314, 318, 424, 483.
Rosario, Hon. Tomás del, special contributions to census statistics by, 36; article on education under the Spaniards, Vol. III.
Rossi, microseismograph invented by, 200.
Royal Company, charter granted to, 432.

Saavedra, Spanish explorer, 417.
Sacrifice, human, practice of, 463, 559, 560.
Sacripante, volcanic cone, height of, 67.
St. John, Sir Spenser, historian, 486.
St. Thomas University, 34, 336.
Sala, town, disappearance of, 229.
Salamanca, river, navigable length of, 69.

Salazar, Fray Domingo de, Bishop, account of early Spanish settlers by, 314; defense of natives against Spanish abuse, 315; slavery abuses described by, 331; abuse of Filipinos by Spaniards recounted by, 333, 424; extract from letter of, 389, 390; description of Chinese and Parian by, 483.
Salcedo, Juan de, conquests of, 313, 418; kidnaping of, 343.
Salt, occurrence of, 86.
Sálug, river, rapids and waterfalls of, 205.
Salvaje, tribe, 475.
Sama Bitali, tribe, 475.
Sama Lipid, tribe, 475.
Sama Lutangen, tribe, 475.
Sama Narvan, tribe, 475.
Sámal, seismic observations at, 202.
Sámal, tribe, where found, 414, 464; manners and customs of, 464, 475.
Sámal Laut, tribe. *See* Sámal.
Sámar, island and province, area of, 58; description of, 66; birds in, 74; earthquakes in, 215, 216; population of, 440; description of inhabitants of, 528.
San Agustin, Father Gaspar de, earliest known published reference to volcanic eruptions of Taal by, 230; Filipinos described by, 494.
San Agustin, monastery, confinement of Salcedo in, 343.
San Cristóbal, Mt., height, location, and description of volcano, 62, 189, 239.
San Nicolás, chapel of, 437.
Sánchez, S. J., Father Alonzo, 395, 396.
Sande, Gov. Francisco de, Filipinos described by, 493, 494.
Sanger, Maj. Gen. J. P., Director of Philippine Census, 17; introduction to Vol. I by, 11–47.
Sangil, tribe, 476.
Sangleyes (Chinese), description of, 483; derivation and meaning of word, 484.
Sanguil, tribe, 476.
Sanskrit element in language, 412.
Santa Cruz, Chinese inhabitants of, 490.
Santa Justa y Rufina, Archbishop of Manila, 344.
Santo Tomás, mountain, location and height of, 61.
Santo Tomás University. *See* St. Thomas University.
Saracens, influence of, 412.
Sarangani, products of, 416.
Sariaya, town, volcanic rocks found near, 239.
Sawyer, Frederic H., civil engineer, description of Filipinos by, 503.
Schools, American, success of, 41; appropriation for, 41; plan of, 339.
Schurmann Philippine Commission, 504.
Seismic centers, 189, 196, 198, 204, 205, 218, 220, 249, 251; observations of, by Paschwitz, 196; microseismic movements, 198, 199; especially affecting Manila, 247-251; of Zambales and Mariveles, 249; of Taal, 249.
Seismic Service, observatory of Manila, 30; stations in Philippine Islands, 199, 200; instruments used in, 200; meteorological districts, 200, 216, 221, 228.
Seismograph, use of, 199; triple pendulum, Gray-Milne's, 200.
Semper, summary of early history of Taal volcano by, 230.
Shipbuilding, defective methods of, 351; sites selected for, 353.
Shipping, regulations of, 349.
Ships, of war and merchantmen, 351; crew, passengers, and cargo of, 352, 358; fitting out of, for defense against piracy, 353, 354.
Siam, early trade of, with island of Cebú, 415.
Sicaba, river, navigable length of, 69.
Sierra Madre, mountain, height and location of, 60.
Silipanes, tribe, 476.
Simaron, tribe, 476.
Siquijor, island, description of, 68.
Sitio, municipal division, 57.
Slavery, discouragement of, by Spaniards in early history of islands, 33; royal decree against, 314; class of slaves, 324, 325, 438; abuse of, 331; sanction of, by Spanish officials, 391; negro, 480.
Smallpox, mortality records affected by, 42, 444.
Smithsonian Institution, report of, on tribe classification, 467.
Social History of the Races of Mankind, by Featherman, extract from, 498.
Sorsogón, province, earthquakes of, 221; hemp regions of, 431.
South America, trade with countries of, 347, 348.
Spain and Portugal, union of, 315.
Spain, United States treaty with, 464; subjection of pirates by, 465.
Special agents of Philippine Census, 597.
Spelling, changes made in, 413 (*Director's note*).
Springs, hot, 192, 193, 216, 226, 241; sulphurous, 216, 239, 241, 245; salt, 243, 244, 246.
State of the Philippine Islands, The, by Tomás de Comyn, extracts from, 349, 495.
Stovell, Captain, report of baguios in Guam by, 156 (*note*).
Streams, character of, 77.
Streets, condition of, 59.
Stuntz, Rev. Homer C., Filipinos described by, 506.
Subanos, aborigines of Mindanao, 416; tribe, 461, 476; localities peopled by, 552–560.
Sucesos de las Islas Filipinas, by Morga, extracts from, 427, 479, 485.
Suez Canal, increase of population affected by opening of, 35, 479.
Sugar, 40, 68, 356, 357, 446.
Sulphur, occurrence of, 85.
Sultan, of Sulu, power of, 463, 464; decreasing power of, 467.
Sulu, sea, location of, 50.
Sulu, tribe, home of, general description of, 464–467, 476.
Sulúan, island, location of, 413; meaning of word, 413.
Superstitions, 327, 328, 514, 515, 521, 572, 578.
Supervisors of Philippine Census, appointment and instruction of, salaries of, 13, 16–19; extracts from reports of, on Filipinos, 511–529.
Supreme Court, in Spain, right of appeal to, 399; of Philippine Islands, organization of, 408, 409.
Surigao, seismic center of, location and description of, 207, 208; ancient fortifications of, 321; description of inhabitants of, 528.
Survey, United States Coast and Geodetic, report issued by, 51, 467.

Taal, lake, description of, 62.
Taal, village, disappearance of, 229, 232; repopulation of, 234; present population of, 433.
Taal, volcano, height and condition of, 62; description of, 228–236; eruptions of, 230–234, 236; Zúñiga's theory concerning, 234; relative position to Manila of, 247; direction of seismic waves of, 249; location of volcanic and seismic centers of, 250.
Tabanda, tribe, 476.
Tabaro-Munti, location and description of, 229.
Tablas, island, area and description of, 70; population of, 422.
Taft, William H., civil governor, proclamation of, in regard to Philippine Census, 20; description of Filipinos by, 529–531.
Tagabili, tribe, 476.
Tagablis, tribe, 476.
Tagabuquit, tribe, 460.
Tagacaolo, tribe, 462, 476.
Tagáloc. *See* Tagálog.
Tagálogs, tribe, original alphabet of, 327; uprising of, 331; Sanskrit element in language of, 412; settlements, 423; description of, 495, 498, 501, 502, 507, 515–524; comparison of, with Ilocanos and Visayans, 507, 508.
Tagaud, tribe, 476.
Tagbanúas, tribe, alphabet of, 327; classification of, 460, 476; localities peopled by and general description of, 548, 549.
Tagbilaran, city, location of, 67.
Tágum, river, seismic observations at mouth of, 202.
Tambag, river, location and navigable length of, 65.
Tambóbong. *See* Malabón.
Tanao, river, navigable length of, 69.
Tandubás, island, 464.
Tantagúan, Mt., height of, 61.
Tariff, rates of, 356, 360.

Tárlac, people of, 421, 436; description of inhabitants of, 515.
Tavera, Hon. T. H. Pardo de, special contributions to census statistics by, 36; article on history of the Philippine Islands by, 309-388.
Tawi Tawi, island, enumeration of Moros in, 26, 27, 562; physical geography of, 73.
Taxation, payment of, in products, 348; revenue derived from, 357-360; persons exempt from, 360; property and poll, 361; assessment and collection, 368; municipal, 373; Chinese, 490.
Tayabas, foreign element in, 479.
Taytay, town, destruction of, 488.
Tayug, mission of, 437.
Temperature, thermic conditions in specified provinces, 91-103; distribution of, in archipelago, 92; of coast and interior, 96; regions of high, intermediate, and mild, 97, 98; effect of cloudiness on, 104.
Tepasi, mountain peak, height of, 68.
Ternate, town, in the Moluccas, withdrawal of troops from, 316; municipality, in Cavite, 480.
Terrero, Governor, petition for expulsion of friars presented to, 382.
Thunderstorms, distribution of, 176; frequency of, 176-178; maxima and minima of, 178; yearly average of (1888-1897), 178-180; relative intensity of, 179; classification of, 179, 180; orientation of, in Manila, 181.
Ticao, island, 66.
Tides, irregularity of, 56; instruments for registering, 200.
Tigaonon, tribe, 477.
Tiguran, mountain peak, height of, 69.
Timarau, number of, 73.
Timber, number of species of, 76; licenses concerning, 76; value of, to government, 77; average number of feet of, per acre, 77; regarding weight of, 77; production of, 78.
Tinaogan, village of, 425.
Tinguianes, tribe, description of, 438, 513; classification of, 477.
Tinorin, river, navigable length of, 70.
Tirurayes, tribe, etymology of name, 462; classification of, 477; general description of, 549-552.
Tobacco, culture of, at present time, 40; government monopoly of production of, 358; culture of, in early history, 432-449.
Tondó, foreign element in, 479; Chinese wealth in, 489.
Tonguil, resort of fishing boats, 465.
Trade, difficulty in collecting statistics of, 46; with Acapulco, 350; foreign, 351-354; insular, 354-357; revenues from, 359-361; with Cebú and Siam, 415; with China, 415, 416, 491; with Mohammedan Malays, 416; general, of archipelago, 427, 431, 432, 435; effect of, on population, 430.
Treaty of Paris, boundaries of Philippine Islands defined by, 49.
Treaty of peace between England, France, and Spain, 322.
Treaty of peace with Aguinaldo, violation of, 385, 386.
Treaty with Spain, boundaries extended by, 464.
Trees, variety of, 75.
Tribes, non-Christian, 37, 453-477, 532-585; Christian, 411, 492-531.
Tribute, payment of, 331, 332; collection of, 358, 390, 391, 420, 424.
Tulur, island, 184, 185.
Tumatanguis, mountain, location and height of, 73.
Turner, Lieut. G. S., description of the Tirurayes by, 549-552.
Typhoons. *See* baguios.

United States, declaration of war against Spain, 386; insurrection of Filipinos against, 388 (*note*); completion of conquest by, 388.
Universities, establishment of, by Spanish Government, 34, 336.
Urban VIII, Pope, authority of bishops enforced by, 342.
Urdaneta, Capt. Andrés de. *See* Molucca Islands, expedition in search of.
Usigan, mountain peak, location and height of, 69.

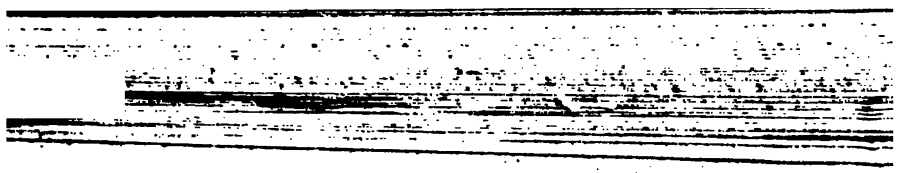
Vegetation, value of, 40; abundance of, 51; flora, features of, 75; forests, 75-79.
Vera, Santiago de, governor and captain-general, 331, 363, 424.
Vicentini, microseismograph invented by, 198, 200.
Victoria, mountain, location and height of, 70.
Vigan, criminal audiencia of, 400.
Vilanes, tribe, 477.
Villalobos, Spanish explorer, 417.
Virchow, Rudolf, extract from writings of, 498.
Visayan, islands, location of, 50; results of low barometer in, 153; earthquakes and volcanoes in, 200-221; tobacco production in, 358.
Visayans, tribe, origin of, 413; number of, 444; description of, 524-529.
Vito, river, navigable length of, 69.
Volcán, island, 228.
Volcán, volcano, 206.
Volcanoes, active, number of, 52; general description of seismic centers, 184-254; volcanic belt, direction of, 186; cones, number of, 187.
Vry, Commodore, 317.
Vulcanism, effect of, 52.

Walker, Capt. K. W., enumeration of Tawi Tawi district described by, 26, 27.
Wallace, A. R., description of Malay archipelago by, 195, 196.
Water, drinking, source of, 59; vapor, effect on climate of, 104-128.
Weather Bureau, value of, to shipping, 29; article on climate by director of, 87-183.
Weights and measures, 327.
Weyler, Governor-General, intervention in behalf of friars by, 382.
Wild tribes. *See* non-Christian tribes.
Williamson, F. P., description of the Subanos by, 552-559.
Winds, effects of, 89; as a climatic factor, 128-152; stations for observation of, 144.
Woods, variety of, 75; classification of, 76.
Worcester, Dean C., description of Filipinos by, 499.
Writing, system of, 327.

Xerez, Dr. Manuel, description of Filipinos by, 504.

Yakan, tribe, 465, 466, 477.

Zambales, mountain range, height of, 61; seismic center existing in, 249.
Zambales, province, lack of streams in, 64; population of, 437; description of inhabitants of, 437, 514.
Zamboanga, comandancia, peninsula of, 72; seismic center, location and description of, 217-219; ancient fortifications of, 321; Spanish outpost, 441; population of, 441.
Zúñiga, Father Joaquín Martinez de, Augustinian historian, theory of Taal volcanic region and comments on, by Becker, 234, 235; ancient condition of islands described by, 432; extracts from writings of, 433-442; Filipinos described by, 494.



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